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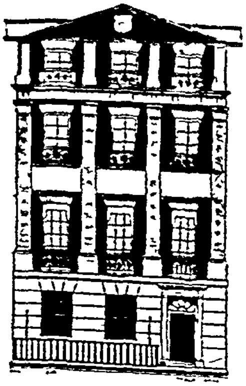

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iders in search of a given subject will find it useful to bear in mind that the references are in several cases distributed under two or more separate but nearly synonymous headings. Institutions and Corporations with the right to the prefix Royal will be found under that prefix, with the exception of Hospitals which will be found under that heading, and Medical Societies, which are separately indexed under Societies. All Universities are indexed under the word University. (A) = Annotation, (C) = Correspondence, (LA) = Leading Article, (ML) = Medico legal, (NI) = New Invention, (O) = Obituary, (P) = Parliament and (R) = Review

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CHRONIC HEAD CASES

CHARLES ANDERSON, M B LOND, M R C P
NEUROPSYCHIATRIST TO THE EMS

MAN's old belief that damage to the vital centres profoundly upsets the balance of the personality finds some support from careful psychiatric observation, man's common belief that *any* blow to these centres must produce far-reaching changes is not substantiated, but the notion dies hard. Patients commonly entertain the notion that the head is a fragile box filled with precious objects, such as thoughts, and vaguely defined vital centres After an injury the resulting change in the personality and capacity for work is attributed to damage to the contents of the box, and the complaint of headache is in many cases a response to the patient's discontent with his own emotional and intellectual capacities, though defects of these may have been present before the injury Now he can explain why he has failed: "I have a headache."

PRESENT INVESTIGATION

A group of 150 consecutive admissions of Service patients to a neurosis centre, in whom head injury was held responsible for the symptoms, were investigated Taken as a group their symptomatology did not suggest a simple syndrome; but if grouped according to the usual personality reactions used in psychiatry their response to a knock on the head could be seen in relation to their behaviour-reactions to other and non-traumatic experiences. In some, physical trauma actually played no part, but they could more easily contemplate an external or physical experience than face the disturbing fact that they were not masters of their own thoughts and moods; they said their heads were damaged, but what disturbed them was the sudden realisation that their self-confidence when confronted with emotion (not danger) had gone In other cases the external event acted as a precipitating factor in the production of neurotic or psychotic reactions, in still others the symptoms were due purely to organic damage; and in a last group there were organic residua to which were added neurotic or psychotic symptoms

The duration of symptoms before admission ranged from 2 years to 7 weeks, with an average of 10 months, most of the patients had already sojourned in three or four hospitals, 11 had been in five hospitals and many—owing to long but interrupted hospital care and medical mismanagement—had become useless in the performance of even the simplest fatigues Their first stay in hospital had usually lasted a month, and most of them had spent about 3 weeks in bed after their accident, though 23 had been kept in bed only a week; of these 15 were sent back to duty with daily headaches

The length of retrograde and post-traumatic amnesia bore no relation to the severity of the subsequent symptoms; indeed 12 patients who were only temporarily dazed developed severe and protracted sequelæ, organic in origin, and it was this group particularly who were kept in bed for too short a period and labelled neurotics or malingerers Those who sustained longer periods of unconsciousness received far more thorough support treatment When judging the degree of pre- and post-traumatic amnesia it is important to realise that these normally diminish with the passage of time, till a stable minimum of events is forgotten. The boundary of a post-traumatic amnesia is not absolute or permanent, there are islets of memory which gradually increase in size and coalesce till only a small part of the scene is in permanent scotoma Retrograde amnesia is both more permanent and more sharply defined though it too gradually diminishes In the following case-histories the periods of amnesia are those last given me by the patients, not those put in the first records of their illness nor those they mentioned first on admission

The complaints varied from single symptoms to a wide span of disabilities, the latter being characteristic of neurotic reactions, though in a proportion of these, particularly the obsessional, attention was focused on a single disability Symptoms and their distribution was as shown in the following table.

Headache, the most constant complaint, was absent in only a small proportion of cases, all of whom showed organic sequelæ, and it was impossible to differentiate between neurotic and organic headaches by an investigation of the clinical variations of this single symptom, which was made worse in all types by shaking or changes in posture

Symptoms

Headaches	138	Fugues and non traumatic amnesias	7
Giddiness	129	Change in character, apart from irritability	4
Faints and blackouts	52	Deterioration of visual capacity—	
Much irritability	39	organic	1
Minor affective disorders (mild depressions)	83	hysterical	5
Major affective disorders (manic-depressive response)	13	Squints	7
Impaired concentration and memory	116	Deafness	2
Hysterical fits	9	Cortical paresis, anæsthesias, agnosias and apraxias	3
Epileptic fits	2	Impotence	8

True intellectual deterioration and epileptic fits are signs of structural damage, but superficially similar symptoms such as impaired concentration and blackouts occurred in both neurotic and traumatic reactions Neurological signs were of course pointers towards organic damage but were seen in only 7% of cases

No one sign or symptom or one group of signs or symptoms, is pathognomonic of psychogenic or physiogenic reactions, the duration of disabilities is no guide to their origin and it is only by assessing the personality as a whole and its reactions to psychical or physical traumata, that a true evaluation of the origin and nature of symptoms can be reached

Physical, neurological, psychometric and psychiatric investigations, and examination of the cerebrospinal fluid were routine, air encephalography was done in the few cases showing intellectual deterioration with raised protein in the CSF suggestive of internal hydrocephalus due to cerebral atrophy or arteriopathy.

Psychometric examination helps to differentiate reaction types, gives an objective measure of the degree of deterioration and is thus useful in prognosis The tests used were Penrose and Raven's progressive matrices, Terman (Stanford revision) battery and vocabulary tests, form boards, Kohs designs, Passalon test and the Babcock deterioration test

Response to head injury (as to any other trauma or disease) depends on the patient's general habit of response to change as well as to the organic change produced by the injury, his general mode of response is itself determined by constitutional factors and by factors which influence him (particularly in his earliest years) during his development The object of classification should be to systematise the different reaction types

I could parallel the findings given in this paper from a series of reactions following cerebrospinal meningitis. Indeed, had I been presented with the clinical findings without details of the accident and amnesias in most instances I would have been hard put to it to judge whether a case was one of injury or infection

NEUROTIC REACTIONS

The largest group was made up of psychoneurotic reactions and contained 69 patients, of whom 62 were hysterics and 7 obsessionals Most of these had had previous neurotic disturbances and were unstable personalities, many were unable or appeared unwilling to adjust themselves to harder environmental conditions They had a considerable amount of latent and misdirected aggressiveness and showed an obvious desire to regain the securities of family life away from the discomfort and insecurity of military service Yet there were a fair number of apparently well-integrated and stable personalities who had reacted well to Army life up to the time of their injury; this seemed to have acted as a trigger in releasing neurotic reactions, due largely to guilt over feelings of fear and to incapacity to deal with the hate which active warfare aroused. In addition there were 5 mental defectives whose responses to trauma arose from anxiety about their inability to fit in with a skilled, mobile and mechanised Army. The ruminative, tense obsessional cases were of a different kidney, focusing their doubt, indecision and compulsive preoccupations on their injured head; at the same time they begged to be allowed to return to their duties, though knowing that they would be unable to perform them satisfactorily. When faced with these compulsive demands for distraction from brooding it was essential to discriminate between the element of keenness for work and an almost hypomanic denial of emotional problems

CASE 1 —A gunner of 23 was sent in as a possible traumatic epileptic He had daily headaches and numerous bouts of falling to the ground He was pushed off a bridge during the retreat to Dunkirk, struck his head and was unconscious for about 3 hours with a few seconds retrograde amnesia He managed to make his way to the beaches in a dazed condition and was eventually picked up After return to England he was put on police duties and then at his own request was transferred back to a gun team The headaches, which had been present since the injury, increased in intensity, and he developed numerous attacks of falling to the ground in a state of apparent unconsciousness both on duty and at his billet, he often struck his head during these bouts and once fell downstairs He was a large healthy boy who had worked in civil life as a steel riveter, where he was stable, active, sociable and without any fears He stolidly denied any feelings of fear during his period of active fighting and was disgruntled and aggressive He abreacted violently under narco analysis "I couldn't stick the guns, I'm scared, I shouldn't be yellow, I'm too big for that, all the chaps thought I was tough" Subsequently, with further explanation, he became symptom free but had to be discharged from the Army in view of his instability and liability to relapse

His symptoms were hysterical reactions to his feelings of fear and rage, and he was typical of many who erected façades of aggressiveness in order to deny their inner insecurities

CASE 2 —A gunner of 26 was admitted with headaches, palpitations, insomnia, giddiness and depression dating from a head injury 10 months before when he was unconscious for 6 hours and had about 5 minutes retrograde amnesia His twin sister died shortly after birth; he always felt his parents would rather have had a daughter than him, wished he was a girl and was nervous and out of place all his life He was unhappy at school, later held numerous jobs of a few weeks' duration and was often off work with headaches His chief interest in life was music and he played the village organ He reacted poorly to enlistment, was miserable and solitary for a long time, often wept and could think of nothing but his mother and the coarse behaviour of his comrades He gradually became acclimatised to his altered environment, organised a jazz band and felt better till his head injury occurred

In contrast to the first case, this patient had always been unstable and neurotic, largely owing to latent homosexuality of which he was himself unaware, and his response to trauma consisted of increased anxiety feelings towards this condition of homosexuality

CASE 3 —A private of 24 complained of headaches, trembling, palpitations and depression, dating from a slight scalp wound 9 months before, when he fell from a haystack on to wet grass and was dazed for a few seconds He was terrified of a strict father and had had attacks of headache as far back as he could remember He left school at 14 in standard 4 (top standard 7), had about twelve jobs subsequently with 3 years total unemployment and was a tea masher before enlistment[1] He reacted fairly well at first to Army life as he had joined up at the same time as an older friend who promised his wife and mother that he would look after him He was slow and awkward at drill and often reprimanded, he soon got separated from his substitute father, became miserable, had numerous headaches and finally after his slight head injury was a constant attendant at sick parades His performance with progressive matricies was 23 in 50 minutes (the score of a person of average intelligence not disturbed by anxiety or affective disturbances would be between 40 and 50 in this time) He was a defective lad who had used his slight injury as a peg on which to hang his inability to adjust himself to the stress of Army life

CASE 4 —A corporal of 27 was concussed 13 months before admission, unconscious for 30 minutes, had about 2 minutes retrograde amnesia and was in hospital 5 weeks Since then he had had headaches, dizziness and blackouts, could not concentrate and slept poorly He had always been conscientious, punctilious and a worrier, he had a predilection for figures particularly number 3 He was keen to get on in the Army, worked hard and efficiently, would be thinking constantly of his duties even during his free hours and was in fear of making mistakes and losing his stripes After accident, on return to duty he was anxious about his effici at work, worried about the attitude of his wife and o if he failed, and was in a permanent state of indecision a his activities, beliefs and ideals He was in hospital three times and on one occasion wandered off in a fugue lasting [illegible] days He felt that damage from his concussion was responsible for his symptoms, feared his mental capacity had been permanently altered and often referred to his terrible headaches and his poor head, which became the centre point of all his thoughts

This patient illustrates the reactions of an obsessional personality who became tense and ruminative after a slight head injury which released and accentuated his conflicting feelings.

ORGANIC SEQUELÆ

A group of 56 patients presented symptoms which were held to be physiogenic in origin All had retrograde amnesia, 12 were dazed for a few minutes and the rest had varying periods of confusion up to 10 days In 23 intellectual deterioration could be demonstrated psychometrically, and of these 6 had no headaches and 4 were almost certainly mental defectives—judged by school and work records—whose limited capacities were still further curtailed by injuries to which such people are often exposed through lack of reasonable foresight In 26 the only complaint was of headaches, varying in intensity, made worse and accompanied by dizziness or blackouts on exertion There were 4 who showed definite changes in character, 2 of these were epileptics, of whom one had been concussed in civil life and had been attending hospital for some years before enlisting, 2 were punch-drunk boxers of whom one was involved in a lorry accident. Only 10 cases presented neurological signs such as ocular palsies, nerve deafness or astereognosis Previous severe head injuries involving hospitalisation, changes in memory and absence from school or work were reported in 3 patients and these had severe and protracted symptoms

CASE 5 —A gunner of 24 complained of headaches and impaired concentration and memory. A stable, active lad, he had matriculated and worked as a traveller until enlistment, when he was put on radiolocation and hoped for a commission He had been concussed 12 months before and had about an hour's retrograde and 8 days post traumatic amnesia He was kept in hospital 6 weeks and after 3 weeks sick leave returned to duty in the Orkneys where he had daily headaches, felt giddy, saw double and could not carry on with radiolocation as his eyes and head throbbed He tried to resume reading but could remember nothing of what he read, his writing deteriorated and he had difficulty in spelling He ran a canteen but felt he was a nuisance and a burden and that his injury kept him from the success he so much desired His performance with progressive matricies was 31 in 75 minutes, though his level of intelligence was such that prior to his injury he should have scored about 56, the Terman battery and vocabulary tests gave mental ages of 12½ and 15 years respectively (a characteristic discrepancy in traumatic cases), and his performance with form boards was better than that with Koh's cubes and the Passalon test After 3 months treatment his matricies increased to 45 in 50 minutes, his responses to the Terman battery and vocabulary tests gave mental ages of 14 and 16 years respectively and his performance with Koh's cubes and the Passalon test was much improved

This lad developed intellectual deterioration and though resenting his disability eventually accepted it without developing neurotic reactions

CASE 6 —A driver of 22 was concussed 16 months ago and had a retrograde amnesia of 30 minutes and a post-traumatic amnesia of 8 days Before this he gave no history of nervous disorder and was an active, cheerful, happy go lucky type He was in hospital 4 weeks and after 3 weeks sick leave returned to duty where he was depressed and disgruntled at everything, had difficulty in concentrating, showed lack of initiative, would start work but could not keep to any plan, became asocial, avoided his parents and fiancée and spent a further 3 months in hospital without much improvement On examination he was tense, irritable, depressed, restless, anxious to stand during interviews, and appeared to be struggling hard to prevent tears He stammered, his face and hands twitched and though unaware of his restlessness he was preoccupied with his inability to hold a conversation or to come into contact with his relatives and former friends

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[1] A tea masher is employed to pour hot water on much used tea-leaves which have been mashed to a pulp; this is drunk by his fellow workers at short intervals throughout the day It is often done by mental defectives

He had developed a definite character change following head injury, analogous to the character changes that occur at the beginning of any form of dementia, traumatic or otherwise

Case 7—A trooper of 25 was sent in because of eccentric behaviour after a lorry smash 11 months before, the periods of retrograde and post-traumatic amnesia were a few seconds and 4 days respectively There was no history of childhood traits, he was sociable, active, and figured in boxing tournaments from the age of 11, subsequently taking up boxing as a livelihood He took part in many competitions and would often fight four nights in succession Three years before, he had been told not to fight any more because he had developed headaches, would frequently stagger, had become irritable and afraid of the dark and saw double, but he ignored this advice and was knocked out with increasing frequency He reacted fairly well to enlistment and took part in some Army boxing displays, but resented discipline and was afraid of the horses he had to manage He was kept in hospital 4 weeks after his accident and returned to duty but his work was slovenly and he became increasingly irritable, would hit his comrades on the slightest provocation, started to beat his wife and was tearful and remorseful after such episodes He attacked several non commissioned officers, and while under detention awaiting court-martial wandered off into town clad only in trousers He refused to admit that he was in any way ill and resisted violently attempts to bring him to hospital where he heralded his arrival by knocking out the ward master He had bilateral ocular palsies, right nerve deafness and was emotional and tearful With progressive matrices he gave a score of 29 with an uneven scatter and his mental age with the Terman battery was 10½

This patient showed intellectual deterioration and character change before the lorry accident which increased and hastened his mental downfall It should be remembered that boxers often show character abnormalities irrespective of trauma received while boxing, and in some trauma releases and accentuates latent character instability

PSYCHOTIC REACTIONS

There is considerable doubt as to what proportion of these reaction types are psychogenic or physiogenic in origin, but in any case the influence of trauma in producing psychotic symptoms cannot be dismissed as coincidental The trauma may release an endogenous psychotic reaction or it may cause structural damage with resulting symptoms, usually of a manic-depressive or schizophrenic pattern, often after a period of confusion of a Korsakov type The number of previous or subsequent psychotic relapses is no diagnostic criterion because many individuals whether cyclothymic or schizoid may have only one attack in a lifetime, manic-depressives for example may have only one severe depression and if this occurs after a head injury there is no real evidence whether the reaction is due to organic damage or to a psychogenic response to trauma

There were 14 cases in this group, 5 gave histories of previous severe depression and of these 4 responded to trauma with further depression, 1 with a hypomanic phase, 2 had bad family histories Of 8 patients who developed severe depressions none gave a previous history of psychotic or neurotic disturbances, but 3 had parents who had been in mental institutions with manic-depressive disorders The only schizophrenic case had previously been of a schizoid type, asocial and introverted, and after the trauma he passed into a state of negativism and catatonic rigidity which slowly improved in a military mental hospital

Case 8—A corporal of 32 was concussed 5 months before admission when he had 45 minutes retrograde and 3 days post traumatic amnesia He returned to duty after 6 weeks but could not perform his work efficiently, his concentration and memory deteriorated, he had severe headaches, often wept, was irritable, restless and gradually became retarded and self reproachful He gave no history of nervous disorder or noticeable mood swings in himself or his family After continuous narcosis there was a considerable improvement in affect and a reduction in the intensity and frequency of the headaches He was of pyknic build but it was impossible to say if his affective disorder was basically endogenous or exogenous—a response to trauma

Case 9—A private aged 26 had been involved in a lorry smash 6 months before and there were 30 minutes retrograde and 2 days post traumatic amnesia His mother and wife stated that he had numerous bouts of depression, irritability and restlessness, lasting 2–3 weeks at a time before his accident in civil life He reacted well to enlistment and had been free of symptoms for about 10 months when the accident happened He returned to duty after 3 weeks in hospital and had daily headaches, was irritable, restless, solitary, slept poorly and eventually began to knock his head against the wall and tear his hair He was readmitted to hospital on two occasions and altogether had five lumbar punctures with little improvement in his headaches, head-knocking or depression With continuous narcosis and further treatment he improved gradually over a period of two months and was finally headache free and with normal affect

This man gave a history of numerous endogenous manic-depressive mood swings and had reacted to trauma with a further long and severe depression

MIXED CONDITIONS

One of the psychiatric dogmas of the last war held that patients with severe injuries did not develop neurotic reactions; and that these appeared only after mild and trivial trauma This, though largely true, dismissed the problem of denial completely. A number of patients with varying degrees of organic damage refuse to admit that they are ill, or that their physical state or personality is altered in any way, they push their fears into the background and attempt to maintain an appearance of health based on self-deception Such an illusory method of stabilisation is altogether different from a reasoned adjustment to an altered set of circumstances, it is likely to break down because there is much repressed anxiety This refusal to admit a change in the self arises from the wish to remain as near as possible to a picture of the ideal personality built up in phantasies which alter with time but are constant in their desire to maintain a good image of the ego. The latent anxieties and fears arising from the denial of illness are reversible and can give rise to neurotic symptoms when the illusions break upon hard circumstances, so that a mixed picture of organic and psychogenic symptoms results There were 10 patients in this category.

Case 10—A sergeant of 27 had been concussed 7 months before and had a few minutes retrograde and 5 days post-traumatic amnesia He was a month in hospital and was sent back to duty where he had daily headaches, dizziness, numerous blackouts and became afraid of driving He was readmitted to hospital and returned once more to work after 3 weeks where his headaches although slightly improved were still severe He felt he was a nuisance to his unit and worried lest he lose his stripes, but carried on with full duties and after 2 months wandered off in a fugue lasting 11 days during which he walked from Scotland to his home in Yorkshire whence his wife took him once more to hospital

There was no evidence of any previous nervous disorder and he appeared to be a well-integrated person before his accident, his moderately severe head injury was followed by organic residua to which he developed an obsessional fugue as a result of the breakdown of denial

MALINGERERS

The label "malingerer" usually depends as much on the reactions of the physician as those of the patient and there are many variants between the overt liar and the person who eventually believes his own untruths

Case 11—The one malingerer in this series was a psychopath who had about twenty jobs in 7 years of civil life, who resented Army discipline, had frequent headaches accompanying his feelings of rage and resentment, and since a slight head injury 9 months before had complained constantly of headaches, was in four hospitals and was overheard describing his intention to keep on complaining of headaches till he got his discharge

TREATMENT

The treatment of these chronic cases requires perseverance and patience and an atmosphere of reassurance and encouragement For the neurotic and psychotic reaction types every form of psychotherapy can be utilised, but it is important to keep to a systematised and planned attack and not to change rapidly from one form of approach to another Para-military training—that form of military training possible in a hospital—graduated physical exercises, suggestion, explanation of content, narco-analysis and continuous narcosis were forms of therapy adopted according to the type of individual and complaint

Some of those with organic residua were helped by rest in bed followed by graduated head exercises, many who had been initially sent back to duty too early after their injury were benefited by these exercises which were performed first sitting astride a bench which was grasped by the hands, then standing on the ground and finally standing on the bench The head movements consisted largely of rotation, flexion and extension of the head, looking upwards and opening the jaw, &c, and were gradually increased in intensity and rapidity according to the responses of the patient, till the stage of full physical training was reached The movements are performed under the direction of a specially trained PT instructor who encourages the men to feel that despite their encounters with overturned vehicles, hospitals, doctors, lumbar-puncture needles and so on, they are still fundamentally the same, and that their heads have not been either permanently or seriously altered

Repeated lumbar punctures and histamine desensitisation are of little value in reducing the intensity and frequency of headaches Continuous narcosis was tried on one group of 12 patients and insulin sopor treatment on another group of 12, intractable headaches being the most important complaint in both series The object was to make a break in the continuity of symptoms and improve each patient's reaction and tolerance to pain, and also to improve the mild depressions which these patients showed from the start I found that 6 patients were definitely improved by insulin sopor and 4 by continuous narcosis, the others were unchanged Despite all these therapeutic attempts, in a large number of cases the only effective treatment consisted in making the patient realise and adjust himself to his diminished capacity for work, study and pleasure Results are analysed below

—	Cases	Returned to unit	Recommended for discharge
Hysterical reactions	62	34	28
Obsessional reactions	7	2	5
Organic sequelæ	56	19	37
Psychotic reactions	14	2	12
Mixed reactions	10	6	4
Malingerers	1	1	0
Total	150	64	86

It was thought to be as useless to send back to duty patients who would rapidly disintegrate and once more become hospitalised as it was to expect those with frequent traumatic headaches to be able to keep up with the pace of military service, such patients were made as fit as possible for civilian occupation before discharge

PROPHYLAXIS

The prevention of chronic reactions depends largely on efficient handling from the start of illness, and one of the most potent factors in its development is the repeated hospitalisation of patients, each time in a different institution, they spend many months in idleness during which they have ample time to fix their attention on their disabilities

In this command every man who has received a head injury, whatever its severity, now goes forthwith to a head centre where he receives appropriate treatment and is followed up until a decision is made on his disposal, this depends on his reactions to a course of 3 weeks special physical training, including head exercises, through which every patient has to pass, partly so that his response to military training can be assessed and partly as a means of rehabilitation No patient is sent back to duty until he is either symptom-free or has no more than two or three mild headaches every week, those who do not so respond are recommended for discharge from the Army Out of 283 consecutive acute admissions 190 were returned to duty symptom-free, 5 died, 10 were re-categorised and 82 recommended for discharge after treatment, of these 82, 51 were organic and 31 neurotic

SUMMARY

A series of 150 consecutive admissions of Service patients in whom head injury was held responsible for symptoms were investigated

Symptoms included headaches, giddiness, faints, irritability, mild depression, manic-depressive response, impaired memory and concentration, hysterical and epileptic fits, fugues, amnesias, change of character, deterioration of vision, squints, deafness, pareses, sensory disturbances, and impotence

Case-histories are given of 4 patients with neurotic reactions, 3 with organic sequelæ, 2 with psychotic reactions, 1 with mixed symptoms, and 1 psychopathic malingerer

Treatment included psychotherapy, graduated physical exercises, narco-analysis and continuous narcosis, and insulin sopor treatment

Of the whole series of 150, 64 returned to their units and 86 were recommended for discharge from the Army

The following conclusions may be drawn from these cases

Reactions of the personality as a whole should be assessed in order to evaluate the cause of the symptoms and the prognosis Neurological signs are uncommon after head injury and psychiatric and psychometric investigations are therefore important Cases suspected of neurosis or malingering may have developed organic sequelæ after slight head injury Neuropsychiatric control of these cases is desirable, from the onset till the final disposal of the patient, it is useless to send back to duty patients who are not fully recovered The patient who denies his illness may develop neurotic reactions, superimposed on organic symptoms

I wish to thank Dr Flowers for the opportunity to see these cases, and Mr James Hardman for permission to quote the results at his head centre

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GIARDIAL INFESTATION WITH STEATORRHŒA

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THE following case is the second recorded instance of steatorrhœa associated with giardiasis in Ireland The first was also observed in St Vincent's Hospital, Dublin, and reported by McGrath, O'Farrell and Boland (1940), their patient was a man who had a short history of steatorrhœa with progressive emaciation resulting in death soon after the diagnosis was made from specimens of duodenal contents The chemical analysis and microscopic appearance of the stools was typical of idiopathic steatorrhœa X rays revealed considerable deformity of the mucous-membrane relief of the jejunum and ileum The autopsy findings were widespread destruction of the epithelium of the small intestine, greater even than the X rays suggested, in which *Giardia lamblia* were observed in profusion

CASE-RECORD

This second patient (fig 1), a boy aged 9¼ years, was first seen in February, 1941 The chief complaints were retardation of growth, attacks of diarrhœa off and on for some time, but persistent and severe during the last 6 months, the stools being bulky and pale, a persistent craving for

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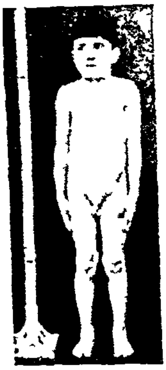


Fig 1—Patient in February, 1941, aged 9½ years Scale of feet

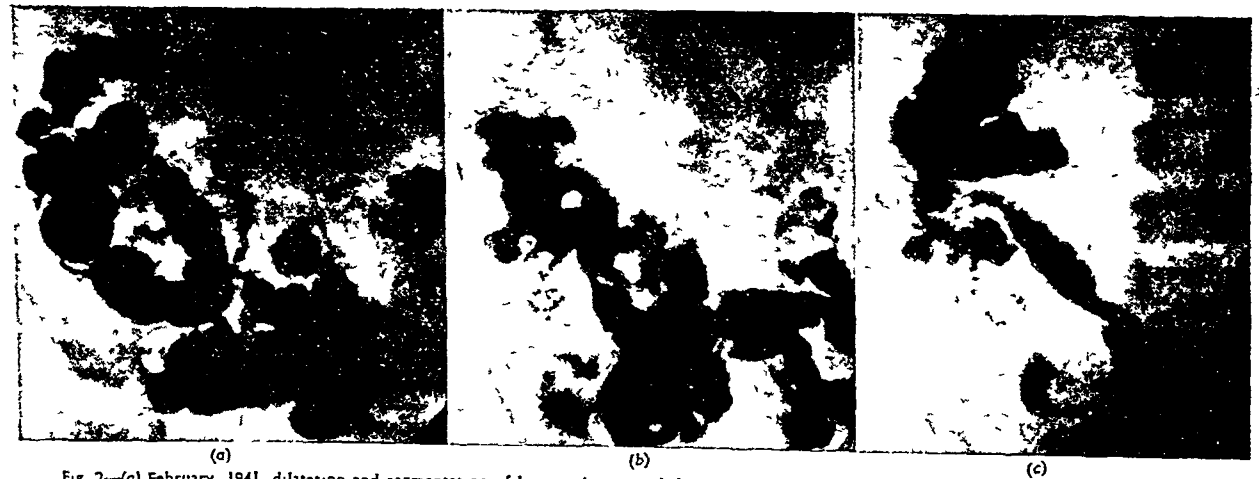
sugar and a relatively enormous appetite, vague abdominal pains, particularly in the left iliac fossa. There were no symptoms of tetany. The family history and previous history were irrelevant except that a brother, two years younger, was taller and stronger.

The patient was undersize and undernourished with slightly protuberant abdomen. His face was wizened and the skin on his legs somewhat dry. Blood-pressure 90/55 mm Hg, pulse-rate 84–120 per min. Serum calcium 10·5 mg per 100 ml and glucose tolerance after 30 g of glucose as follows: fasting level 83 mg, 1 hr 105 mg, 2 hr 91 mg per 100 ml. Blood count: red cells 3,800,000 per c mm, Hb 62% (Haldane), white cells 6400 per c mm (polymorphs 70%, small lymphocytes 21%, large lymphocytes 9%, no eosinophils). The tuberculin skin reaction (Vollmer patch test) was negative. X rays showed deformity of the mucous membrane relief of the lower part of the small intestine (fig 2*a*, *b*), consisting of dilatation, segmentation and absence of normal mucous membrane pattern, the upper loops of jejunum appeared normal. The changes in the small bowel were not so widespread as in the first patient. Slight decalcification of the long bones, bone age normal.

Microscopically the pale-brown stools contained an excess of fat crystals but no excess of fat globules, no parasites were observed during a detailed examination, the benzidine reaction was negative. The stools never contained an excess of mucus except after purgation. Chemical analysis of the fat content of the stools, while on a low fat diet, confirmed the diagnosis of steatorrhœa.

	During infestation	3 weeks after infestation
Fæces wet wt (72 hr bulk sample)	500 g	398 g
Fæces dry wt	150 g	84 g
Fat intake 72 hr	102 g	174 g
Total fat (% of dry fæces)	29·6%	25·2%
Split fat (% of dry fæces)	25·6%	13·7%
Split fat (% of total fæcal fat)	86·2%	54·9%
Total fat excretion	45 g	21 g
Percentage of fat intake excreted	45%	12%

Bearing in mind that the previous giardiasis patient showed no parasites in the fæces, we attempted duodenal intubation, but without success. A severe purgation with two ounces of sodium sulphate was then administered and the liquid stool was examined almost immediately after passage. Its mucous shreds contained numerous encysted forms of *Giardia lamblia*.



(*a*) (*b*) (*c*)

Fig 2—(*a*) February, 1941 dilatation and segmentation of lower jejunum and ileum. (*b*) February 1942 condition unchanged, segmentation still present, (*c*) February 1942, narrowing of terminal ileum and absence of mucous membrane pattern

During the following week the diarrhœa subsided, and thereafter the patient usually passed one brown motion per day, although no specific treatment was given.

Three weeks after the first analysis a second analysis of the stools while on a normal fat diet was within normal limits, as shown in the table. Microscopic examination showed no excess of fat crystals and there were fewer undigested food particles. Five subsequent attempts to find giardia by sulphate purgation failed. The patient was sent home 6 weeks after admission on a diet which included liver and milk, he was taking an iron mixture. Unfortunately this treatment was not adhered to regularly.

By February, 1942, 12 months later, there had been no recurrence of diarrhœa or abdominal pain. There was no other striking clinical improvement. His height was now 45⅝ in—a growth of 1⅝ in in 12 months, whereas the expected growth for this age is about 2 in. He weighed 44 lb. There was still definite anæmia, red cells 4,640,000, Hb 51%, white cells 8000, no eosinophils. Giardia were not observed even after saline purgation. X ray examination of the small intestine showed no change from the first examination (fig 2*b*). Mepacrine hydrochloride ('Atebrin'), which is specific for this parasite, had been given in doses of 0·1 g three times a day for 5 days in January, 1942, and seemed to cause no clinical change in his condition. His appetite was still relatively excessive.

DISCUSSION

The main clinical features of giardial infestation, particularly in children, are steatorrhœa, anæmia, retardation of growth and abdominal pain, but symptoms attributable to inflammation of liver, gall-bladder, duodenum, colon and rectum have also been described (Manson-Bahr 1939, Chopra et al 1939, de Muro 1939, Veghelyi 1940, Nutter et al 1941, Hartman and Kyser 1941). It is a common infestation often without any symptoms in tropical and subtropical climates, and is commoner in children than in adults. Miller (1926) has reported it in England among children suffering from enterocolitis with mild steatorrhœa and mucus.

In view of the autopsy findings reported by McGrath and his colleagues it seemed possible that the symptoms in this patient were due to giardiasis. This hypothesis is supported by the fact that the disappearance of the parasite coincided with the cessation of the steatorrhœa and the abdominal pain. The persistence of the anæmia and the retarded growth must be explained by the local organic lesion in the mucous membrane as revealed by the second X-ray examination.

The points of particular interest in these two cases are that the giardia was not observed in stools passed in the ordinary way, and that the parasite seemed to disorganise the mucous membrane of the small intestine, as indicated by X-ray and autopsy findings. Study of other cases may determine whether supposed idiopathic steatorrhœa sometimes originates through destruction of intestinal epithelium by a transient giardiasis in youth of an intensity midway between the two cases observed here. It seems important, therefore, to collect data on cases of idiopathic steatorrhœa soon after the first appearance of symptoms. The relationship to idiopathic steatorrhœa is also suggested by the X-ray findings in the patient described here, which resemble those reported by Kantor (1939) in cases diagnosed as idiopathic steatorrhœa, in our patient, however, the changes were confined to the lower portion of the small bowel. Abnormal X-ray findings indicating atony of the small bowel have been reported in malnutrition and avitaminosis (Kiefer 1939), but our patient suffered from defective absorption rather than defective intake

Finally, it is possible that patients suffering from dwarfism and malnutrition without intestinal symptoms, but showing some deformity of the lower small intestine as judged by the X-ray findings may be suffering from the sequelæ of giardiasis We have had one such patient under observation in whom no pathogenic parasites were found

SUMMARY

In a case of giardiasis in a boy the symptoms and findings resembled those of idiopathic steatorrhœa The parasite was found in the stools only after a severe saline purgation, after which the steatorrhœa and abdominal pains disappeared, and the parasite was not subsequently observed X-ray findings which were unaltered a year later indicated a persistent abnormality of the epithelium of the small intestine

Some cases of so-called idiopathic steatorrhœa may have been due in the first place to injury of the intestinal epithelium by a transient giardial infestation

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SOLUBLE PHENYTOIN IN EPILEPSY

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LINGFIELD EPILEPTIC COLONY

ONE point emerges from the considerable literature which has grown up about the use of soluble phenytoin (sodium diphenylhydantoinate) in epilepsy—that the effective therapeutic dose is very near the toxic dose In other words, if the patient has enough to stop his fits he runs a considerable risk of showing toxic signs, often of a fairly serious nature Another disadvantage of the drug is its expense The clinician is therefore entitled to ask whether it is established that soluble phenytoin is so much more effective than, say, phenobarbitone or the bromides as to justify the risks and expense Such justification, he might argue, would only be found if fits were completely arrested or drastically reduced, slight or moderate fit reduction would be bought at too high a price

During the past 3 years we have given soluble phenytoin to over 130 patients at Lingfield, but in attempting to give an answer to the clinician's question we decided to consider only those whose fit incidence under previous treatment here was known, and in whom the dose of soluble phenytoin had been increased until either the fits were completely or almost completely stopped, or until toxic manifestations of so serious a nature had appeared that withdrawal or reduction of the drug became necessary Thus we had to discard the records of patients who were taking soluble phenytoin on admission, who were receiving phenobarbitone at the same time, or who have not yet been worked up to the optimum therapeutic dose There remained 63 cases whose previous fit incidence, usually over a twelve-month period, was known, and who had reached either the optimum therapeutic or the toxic dose The age-incidence of this group, which contained 38 males and 25 females, was as follows 6 aged 5–10; 44 aged 11–15, 8 aged 16–20, 5 over 20 The average intelligence quotient was 80 It was therefore a group of adolescents, normal, or only moderately retarded in intelligence, this must be borne in mind, since different results might be found in older patients with more stabilised nervous systems and more confirmed fit habits

In all cases bromides, usually in doses of gr 20–30 a day, and phenobarbitone, usually gr 2 a day, had proved of little or no value Dosage of soluble phenytoin was started with gr 1½ tablet two or three times a according to age, given with food, and was increased one tablet a day at intervals determined by the fit incidence and other considerations until the cessation of fits or the appearance of untoward symptoms called a halt, 4 patients never got beyond two tablets a day, 30 stopped at three, 24 reached four, 4 reached five and only 1 achieved the maximum dose of six

FIT INCIDENCE

In considering fit incidence under soluble phenytoin only the incidence under the maximum dose (i e, the effective dose or the toxic dose) will be taken into account. In many cases the period during which this dose was administered was cut short by the appearance of toxic signs, and it would be misleading to place any value on fit figures over a period of a few days or weeks We therefore decided, in estimating the effect of the drug on fit incidence to ignore all those cases—20 in number—where the maximum dose could not be maintained for more than two months The remaining 43 cases had taken the maximum dose for 2 to 20 months, the average period being 5½ months In counting fits any which occurred in the first few days of maximum-dose administration were ignored During this time the effect of the increased dose had perhaps not got well under way, and in a few cases at the beginning of treatment the attacks might be due to withdrawal of phenobarbitone With this proviso, it was found that 24 of the 43 patients were completely clear, and 16 almost completely clear of fits, while only in 3 patients were the fits either increased, unaltered or only moderately decreased in number When it is remembered that these were all cases which had proved resistant to previous medication, the figures show that soluble phenytoin is a most powderful anticonvulsant drug

The fit picture, however, is not quite so rosy as these figures imply, for among the 20 cases who had the maximum dose for less than 2 months there were 8 in which improvement was slight or absent Of the total of 11 recalcitrant cases, 4 had major fits, 5 had frequent petit mal and one had major fits which under soluble phenytoin were partly replaced by attacks of slighter and varying severity The other patient was a boy who judged by the accepted criteria was a typical case of pyknolepsy extending over many years. With soluble phenytoin the petit mal ceased, but he had a major fit

In only 4 of the 63 cases was soluble phenytoin withdrawn on account of failure to control fits One was the boy already mentioned, whose pyknoleptic attacks were replaced by a major fit, one was a young man whose attacks of petit mal were aggravated by the treatment, and the other 2 had major fits which were becoming more frequent with increasing dosage

If we group together major fits and attacks characterised by loss of consciousness lasting for more than a few seconds and accompanied by local or general convulsions (incomplete major fits), we find that in 72% of all cases these fits were entirely arrested by soluble phenytoin, in 84% psychomotor attacks were similarly stopped, whereas with the one exception mentioned in no case was there arrest of momentary attacks of petit mal (absences) In cases of petit mal the drug was pushed until toxic manifestations appeared

A pertinent question is how far arrest of fits is likely to be maintained We have not sufficiently long experience to answer this question Tolerance, as evidenced by return of fits, may occur after weeks or months of freedom, and a further increase of dose may be required But a review of our cases shows that tolerance is definitely less common than with phenobarbitone It has been reported that a fit-free period on soluble phenytoin may be broken by a rush of fits, rather than by the gradual return of attacks characteristic of phenobarbitone tolerance Our records lend some confirmation to these reports In 2 cases in this series recurrence was manifested by a burst of attacks, whereas such a sequence of events has only occurred once in 24 years experience with phenobarbitone

TOXIC MANIFESTATIONS

The margin between an effective therapeutic dose and a toxic dose is always small with soluble phenytoin In many cases the doses are identical In no less than 24 of the 63 cases the drug had to be stopped or reduced on account of serious toxic manifestations. In 17 of these the fits gave every promise of complete, or nearly complete, control.

The toxic manifestations are readily classified under three heads: skin troubles, 3 cases; mental changes, 3 cases; neurological disorders, 18 cases.

Skin troubles.—Three patients were taken off soluble phenytoin on account of skin manifestations; 2 were boys who had been taking three tablets a day for 4 weeks, one was a girl taking two tablets for 12 days. In a fourth case three tablets caused a rash in a boy after 10 days but as there was no pyrexia the drug was continued and on the third day the rash faded. None of these children showed any other signs or symptoms of toxicity from soluble phenytoin. In 3 there was malaise and a moderate pyrexia, the highest temperature recorded being 102° F on the second day. On first appearance 3 cases resembled measles; the face was bright red with puffiness under the eyes; the trunk showed a bright red discrete maculopapular eruption (not present at the back of the neck or ears) which tended to coalesce and become confluent forming large erythematous areas. In one case there was no discrete rash but confluent patches occurring in a hemiplegic arm and leg. The severity of the symptoms and the height of the rash appeared on the second or third day, after which it began to fade and had almost disappeared by the end of a week. In 2 cases the rash reappeared in a mild form a month after treatment had been stopped. Recorded cases of general exfoliative dermatitis following soluble phenytoin rashes influenced us in our decision to stop the drug when the skin lesions appeared.

Mental changes in epileptics following any particular form of treatment are difficult to assess. None of our patients were insane, a few were high-grade mental defectives, but quite a number showed in varying degree that instability, sensitiveness and inadaptability which are regarded as characteristic of the epileptic temperament. Periodicity is often a prominent feature of these manifestations, and their increase or decrease at any time may have little or no relation to any particular form of treatment. Further, all the patients treated were fairly severe cases of epilepsy with frequent attacks. To stop their fits suddenly in mid career was a drastic thing to do, and the cessation was likely to give rise to mental change, beneficial or the reverse, apart from any specific action of the drug. Many, possibly the majority, of our patients were brighter and happier with an effective dose of soluble phenytoin because they realised that their fits had stopped and their future was more hopeful. Some cases showed dramatic improvement. A girl of 14 was mischievous, restless, acquisitive, an eater of refuse, incontinent by day and night and subject to epileptic fits in very large numbers. Soluble phenytoin medication was followed at once by an absolute arrest of fits, and an extraordinarily rapid disappearance of all her unpleasant characteristics. The freedom from fits and improvement in behaviour have now lasted for nearly a year. In some patients, on the other hand, the cessation of attacks was followed by a period of increased irritability with hypersensitiveness, quarrelsomeness and even violence. In 7 of the 63 cases this condition was noted, but was not severe enough to call for withdrawal of soluble phenytoin, but in 3 cases the treatment had to be abandoned; 2 of these were young adults with a long history of frequent fits; one of them was confused as well as violent, and the other showed confusion with delusions. The third was a boy of 15 whose natural irritability increased to a violence which made him dangerous to others. In all 3 cases, the mental symptoms appeared when the dose had been increased to four tablets a day. These confirm a belief we have long held that there is a small group of epileptics who should be allowed at all costs to continue having their fits. In only one of the 63 cases was there any report that soluble phenytoin produced drowsiness.

No general statement can therefore be made about the effect of soluble phenytoin on the mind. Our experience leads us to believe that mental changes following its use are probably due to drastic interference with the fit incidence rather than to any specific effect of the drug itself.

Neurological disorders are by far the most important, and also the commonest, manifestations of toxicity due to soluble phenytoin. In 18 of our series the neurological picture was so grave that the drug had to be reduced or stopped. There were five principal neurological signs of overdosage and in cases which called for action these signs seldom occurred singly. In 6 cases they made their appearance with only three soluble phenytoin tablets a day, in 9 cases with four tablets; in 2 cases with five; and in 1 case with six tablets. The average duration of the maximum dose before neurological manifestation necessitated withdrawal was 6 weeks. It ranged from 3 days to 32 weeks—a fact which shows that supervision must never be allowed to relax. In order of frequency the signs were: nystagmus, 14; ataxia, 10; tremors, 9; diplopia, 6; vomiting, 6 cases. None of these manifestations were confined to the 18 cases under review; they were also found singly or in groups in several of the other 45 patients but not in a serious degree. The first and most frequent sign of toxicity is undoubtedly nystagmus. Slight to-and-fro movements of the eyes on extreme lateral deviation, in a patient in whom this was absent before medication, is a warning that his nervous system is beginning to feel the strain of soluble phenytoin. Such mild lateral nystagmus was often seen in our series; in the more advanced cases gross nystagmus, both horizontal and vertical, was seen.

Patients with fully developed ataxia presented a grievous picture that could not be overlooked. Cases of tremor varied from fine tremor of the extended hands to irregular coarse movements that bordered on myoclonus. Rarely were the tremors of sufficient significance by themselves to call for interference. Diplopia is a subjective symptom, and since leading questions to children were, we felt, better avoided we think it probable that the number who had diplopia was much larger than the number recorded. It might well rank with nystagmus as one of the cardinal signs of soluble phenytoin intoxication. It was seldom accompanied by a demonstrable squint. We decided to include vomiting among the neurological manifestations only after a careful review of case-histories. An occasional vomit or a complaint of nausea was common in our patients. In many cases the complaint could be ignored and there was no recurrence; in others a small reduction of dose for a day or two was effective. In the more serious cases, where vomiting was persistent it was invariably accompanied by fairly severe neurological manifestations. We therefore conclude that it is more reasonable to regard it as evidence of disorder in the central nervous system than of gastric irritation. Other neurological signs, such as slurred speech, myoclonus, or symptoms such as dizziness, headache or blurred vision were met with in isolated cases, but on analysis the five which we have stressed stand out as the distinctive features of soluble phenytoin intoxication.

A reassuring observation is that all the toxic manifestations recorded above, with the exception of the skin lesions, invariably disappear within 2–3 days if the drug is stopped.

Gums.—Simple hyperplasia of the gums has often been noted, and is a sign that must be looked for, since the patients do not complain of it. Its detection is not worth recording unless a note has been made of the gum condition before soluble phenytoxin was started. We noted it in 9 of our 63 cases, and in none did it assume such formidable proportions as to call for withdrawal of the drug.

COMBINED MEDICATION

If soluble phenytoin, given in optimum therapeutic doses, is so often toxic, why not give it in somewhat smaller doses with phenobarbitone? Some authors have indeed written of the synergistic action of the two drugs. Our experience of this combined medication has not been large enough to justify a reply to the question, but neither has it been very encouraging. In any case careful observation over long periods with the drugs in varying proportions would be required before any conclusions could be reached.

SUMMARY

An attempt has been made to answer the question whether soluble phenytoin is such a powerful anticonvulsant that its use in epilepsy is justified in spite of the risks it entails. The answer is in the affirmative. By gradually increasing the dose fits can be drastically reduced or completely stopped in most patients, but with the effective therapeutic dose grave toxic signs calling for withdrawal will occur in at least a third of the cases From this it follows that soluble phenytoin should never be prescribed unless phenobarbitone and the bromides have first been given a thorough trial, and that, if clinically effective doses are aimed at, every case under soluble phenytoin demands close and continuous supervision

EXTENSIVE AIRSCREW INJURIES

John Howkins
M S LOND , F R C S
SQUADRON LEADER, R A F V R

Geoffrey Wooler
M B CAMB , F R C S
CAPTAIN R A M C

THIS case is reported as an example of extensive non-fatal injury to the thorax and to show the kind of damage that a revolving airscrew can inflict on a man

CASE-RECORD

The patient, AB, aged 18, joined the RAF as an aircraft apprentice and became a fitter in June, 1941 On June 18, 1941, at 10 40 A M , the captain of a Blenheim aircraft finished running up his engines and gave the signal to remove the chocks under the wheels AB failed to remove the port chock at his first attempt and in swinging his body round to get better leverage was caught by the blades of the port airscrew The accident took place at the periphery of a large aerodrome, and it was 20 min before a runner could fetch the ambulance and the medical officer on duty When first examined, AB was pale, sweating and with a weak pulse of 100 per min His extensive injuries were dressed by the simplest possible first aid compression dressings and he was transferred to the infirmary, 10 min drive away Bleeding was surprisingly slight Oxygen was given during the journey, and though his pulse rate rose to 120 his general condition deteriorated little When admitted he was immediately transfused with 2 pints of whole stored blood, but no attempt was made to disturb his dressings When seen by one of us (J H) a little over an hour after his accident, he was conscious, severely shocked, with a pulse rate of 130 His respirations were much embarrassed and he was cyanosed He had a sucking pneumothorax of the right chest, though this was effectively controlled by his dressing

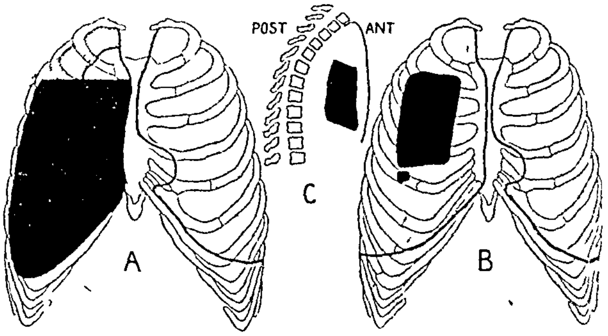
His right arm was hanging by his brachial plexus and brachial artery, a small flap of skin and part of the biceps , all extensor muscles and the bone were severed completely The right radial pulse was impalpable A large gash starting behind the right clavicle had severed ribs 3–9 inclusive The tip of the airscrew had lacerated all three lobes of the right lung posteriorly to an average depth of 1 in , there was continuous bleeding from the lung, but little from the parietes A third gash passed from the superior medial angle of the right scapula obliquely across his spine down to the level of his 8th left rib This gash had cut through the spines of his upper dorsal vertebræ down to the dura mater of the cord without opening it—a sort of fortuitous laminectomy A fourth gash, about 6 in long, extended from the middle of the spine of the left scapula down to the left posterior axillary fold, cutting the superficial parts of the supraspinatus and infraspinatus on the left and nicking the spine of the left scapula

OPERATION

We decided to operate, though realising that any surgical interference would probably kill him, because of the persistent and progressive hæmorrhage from his right lung. He was now given 2 pints of plasma and routine anti shock treatment

Just before operation, at 3 P M , his pulse rate was 140, respiration rate about 50 and systolic blood pressure 50 mm Hg No premedication was given and anæsthesia was induced with 2 c cm of a 5% ‘Pentothal Sodium’ (Abbott) solution This was injected directly into the rubber tubing of the blood drip, previously put up Oral intubation was then carried out by direct vision and anæsthesia was maintained with a mixture of cyclopropane and nitrous oxide using the carbon dioxide absorption technique with a ‘Circle’ absorber[1] After induction respiration failed completely and continuous artificial respiration was established by intermittent positive pressure on the rebreathing bag No effort to bring back natural respiration was made until the end of the operation During the operation the blood pressure was too low for any adequate record to be made, though the beating of the heart in the chest could be observed At the close of the operation, however, a reading of 60 mm Hg, systolic, was obtained The pulse rate remained at about 160 per min throughout, often being imperceptible in the temporal artery He was given a pint of whole blood during the operation

The bleeding came from the lung and not the chest wall—the reverse of the usual finding An ample thoracotomy had been provided by the airscrew No attempt was made at a classical excision and debridement of the wounds, the irregularities of the fractured ribs merely being trimmed with rib shears Hæmorrhage from each separate lobe of the lung was controlled by both interrupted and mattress sutures of catgut, put in with a large round-bodied needle There was no hæmatoma , an air screw makes a clean incised wound. When the pleural cavity was quite dry, the wound of the thorax was closed without drainage, after being liberally sprinkled with sulphanilamide powder This lack of drainage was a mistake , it would have been better to put in an intercostal tube, which of course would have had to be closed if inserted at this stage The chest wall was sutured with interrupted catgut through pleura and muscles and interrupted silkworm gut through the skin The other gashes of the back were also closed without drainage and the right arm was disarticulated at the shoulder joint, because the blood supply was thought to be so jeopardised that conservative treatment would be mischievous At the end of operation his condition was a little better and he was given a further 2 pints of whole blood, making 5 pints of blood and 2 pints of plasma in all



Tracings of radiograms A, four weeks after accident, showing complete blackout to second rib B and C pleurogram eight weeks after accident, showing apical empyema

SUBSEQUENT PROGRESS

Convalescence was stormy The day after operation his pulse rate fell to 100, respiration to 22, and his temperature was normal His wounds were left untouched for a week The superficial wounds of his back healed by primary union, but his thoracotomy wound became mildly infected as did his amputation wound On the 8th postoperative day he developed a swinging temperature in the neighbourhood of 103° F which persisted for 3 weeks Serial X rays of his chest were taken every week The first, a week after operation, showed that his right lung had re expanded and that the pneumothorax had been absorbed, but it soon became apparent that an empyema was developing On July 10, 22 days after operation, his temperature started to go up and he became very toxic X rays showed what appeared to be a simple right empyema with a fluid level reaching the 4th rib behind Aspiration was attempted, but only 20 c cm of pus were withdrawn from the 2nd space anteriorly Below this level, posteriorly and laterally, the needle went into lung A diagnosis was made of apical empyema with pneumonitis of the lung

On July 12 a plain X ray (A in figure) showed a complete blackout up to the 2nd rib, suggesting a right pyothorax, this proved to be a right apical empyema, with pneumonitis and possibly collapse and infection of the pleural cavity and lung below A more penetrating film was taken but failed to show any more detail except of the bony structure He was too ill at this time for a rib resection, and the lowest limit of the empyema had not been defined On July 17 he was transferred by ambulance, bearing the journey well On July 19 Mr Price Thomas inserted into the 2nd space anteriorly an intercostal tube connected to the usual closed water seal drainage bottle , this drained about 2 oz of pus each day On Aug 6 a pleurogram showed an apical empyema lying mainly in front (B and C in figure). On Aug. 9 a rib resection was performed at the lowest limit of the cavity (5th rib, anterior axillary line). A wide bore tube connected to a closed drainage bottle was inserted. The patient gradually improved. He was encouraged to do the active inspiratory exercises outlined by MacMahon[2] and to exercise his muscles by sitting up in bed and bending from side to side. These exercises require the help of an operator who fixes the chest wall with his hands, as required, thus enabling the patient to expand different parts of the lung in turn.

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[1] Made by Medical and Industrial Equipment, Ltd

He was repeatedly screened and pleurograms were taken to make certain that the tube was in the correct position and that there was no fluid level present. The upper lobe was seen to expand gradually and fill the empyema cavity. The lower part of the lung gradually cleared. Closed drainage was continued until the discharge became too small to measure. On Nov. 17 another pleurogram showed only a very small cavity inside the chest, holding about 3 c.cm. of iodised oil. Closed drainage was discontinued and a smaller open tube was inserted. This was not to be removed until the empyema cavity had completely closed. By Nov. 20 the right lung had cleared completely except for two small opacities in the mid-zone which appeared to be pleural. He had no cough and no sputum and felt well. He was going out for short walks and had gained a stone in a month. His wounds were dressed with tulle gras (Optrex) and they healed without skin grafting; saline compresses were applied at intervals to prevent excessive granulations. He had no neurological signs resulting from the laminectomy.

DISCUSSION

In this case, sucking of the extensive chest wound was controlled by the original dressing. The decision to operate despite his grave condition was made because of the presence of active hæmorrhage—not, as commonly happens, from the chest wall but from the lungs. Local anæsthesia was ruled out by the extent of his injuries. He had been given 2 pints of blood and 2 pints of serum soon after admission to hospital, but it seemed unwise to push large amounts of fluid into his already failing cardiovascular system until after the operation; he was given a further pint of blood by the drip method during the operation itself. Respiration failed during induction, but since natural respiration would probably have been paradoxical, no attempt was made to restore it. Instead, controlled respiration, as described by Nosworthy,[3] was maintained by compressing the rebreathing bag, and anæsthesia was kept at a level just deep enough to inhibit natural respiration. The chest should have been drained by a closed intercostal tube at this stage; had this been done he might have escaped the apical empyema which subsequently developed. This empyema was drained successfully and its progress was carefully controlled up to complete healing. Breathing exercises to encourage active movements of the injured lung were an essential part of the treatment.

SUMMARY

An airscrew accident is reported, with severe injuries of the right arm and laceration of all three lobes of the right lung. The lung was sutured, the chest closed without drainage and the right arm disarticulated at the shoulder-joint. The patient developed a massive infection of the right lung and an apical empyema; this was drained and the lung condition has resolved. He recovered completely, and his retention in the Service is being considered.

We wish to thank Flight-Lieutenant Fenwick, R.A.F.V.R., for details of the accident; Squadron-Leader B. G. B. Lucas for details of the anæsthesia; Dr. Geoffrey Jones, medical superintendent of Bridgend Infirmary, for his cooperation; and Mr. Price Thomas under whose care the patient finally recovered.

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[2] MacMahon, C. *St Bart's Hosp. Rep.* 1928, 61, 81.
[3] Nosworthy, M. D. *Proc. R. Soc. Med.* 1941, 34, 479.

MEDICO-LEGAL SOCIETY.—The annual general meeting will be held at 26, Portland Place, London, W.1, on Thursday, July 16th, at 5.15 P.M. Afterwards Dr. G. Roche Lynch will deliver his presidential address on poisons and poisoning.

Medical Societies

BRITISH ORTHOPÆDIC ASSOCIATION

DELAYED UNION OF FRACTURES

AT a meeting held in Liverpool on May 29 and 30, under the presidency of Mr. G. R. GIRDLESTONE (Oxford) a discussion was held on delayed union of fractures.

Most speakers remarked on the impression generally held that delay in union is commoner than formerly; many of them mentioned the difficulties of the statistical approach both in deciding on a standard of "union" for considering the time factor, and in comparing fractures of the same bone due to different types of violence. There was agreement about the evils of late reduction, of distraction and of infection.

Mr. G. PERKINS (Roehampton) differentiated between "union," when the fracture was solid, and "consolidation" when this had progressed to the state of ability to withstand normal stresses. He emphasised the importance of functional restoration and the need for muscular activity from the outset of treatment.

Mr. R. WATSON-JONES (Liverpool) and Squadron-Leader W. D. COLTART, presented a detailed analysis of 500 shaft fractures of the femur and tibia treated in R.A.F. orthopædic units. The most important factors responsible for delay in the union of these fractures had been (*a*) infection, which trebled the union time; (*b*) distraction of the fragments by excessive skeletal traction, which caused very definite indolence of the fractured surfaces and doubled the union time; (*c*) delayed reduction, late re-manipulation and in the case of the femur late bowing or re-fracture, which almost doubled the union time. In the absence of these delaying influences, fractures united firmly enough for the removal of splints and plaster in an average of 14 weeks. Union to clinical tests had often been present earlier than this, but immobilisation had been continued in walking plasters until the stage of radiographic consolidation. The early resumption of weight-bearing in a walking plaster had been proved to be a delaying factor in cases where minor angulation remained; the weight-bearing tended to increase the angulation momentarily, and thereby distract the fractured surfaces on the open side of the fracture. If it was recognised that union had been delayed by infection, distraction, late re-manipulation, &c., and the period of plaster immobilisation was extended accordingly, these factors were responsible only for slow union and not for non-union. In this series, where complete and uninterrupted immobilisation had been maintained, though in 8 cases early bone-grafting had been performed to accelerate the rate of repair, there was not a single case of sclerosis of the fractured surfaces and established non-union, despite a high proportion of grossly contaminated and infected fractures. Ten per cent. of the cases had been invalided; ninety per cent. returned to duty.

Mr. B. H. BURNS (London) believed that the advantage of the more accurate anatomical position maintained in the modern unpadded plaster cast was possibly counterbalanced by the longer time that appeared to be taken in reaching union. Well-planned open reduction in selected cases offered perfect anatomical restoration with greater freedom of the soft parts.

Prof. HARLAN WILSON (U.S.A.) believed that the type of initial violence might account for the greater time taken by motor-cycle injuries to heal, where speed of impact was noteworthy. He believed that damage to the vascular supply of bone had a great bearing on the time of healing. He remarked on the frequency of delayed union in cases of multiple fracture, which made greater demands on the body's osteogenic functions than single injuries. In his experience the Roger Anderson method of treatment gave the same time of fracture healing as other methods.

Major A. W. M. WHITE (R.C.A.M.C., Toronto) believed that the factors most likely to affect the rate of union were apposition of fracture surfaces and complete and continuous immobilisation. In his survey of 120 cases of fractured tibia, reduction was considered adequate when it was radiologically estimated that 75% of the fracture surfaces were in apposition. In 51 well reduced and immobilised legs the average time for union was 4½ months; in 13 inadequately reduced or poorly immobilised cases it was 8¼ months Bone-grafting had resulted in union in 96% of the cases, but rehabilitation seemed to take longer than in cases uniting without operation

Mr D L GRIFFITHS (Manchester) made a determined plea for inquiry by statistical methods He had submitted 249 cases of fracture of both bones of the leg with displacement to such inquiry, and had arrived at four definite conclusions—open fractures healed more slowly than closed fractures, the two forming distinct groups, direct violence, severe violence, and inadequate apposition of fragments, were all delaying factors Figures indicated that only the grosser errors of treatment were important in delaying union

Mr F W HOLDSWORTH (Sheffield), in a study of 399 cases of fracture of the leg, treated throughout by his own team, found that 349 returned to their own work and 35 to modified work, 15 had very poor function Of 303 adults, 102 compound fractures united in an average of 16½ weeks (the longest were 28 weeks in 4 cases), the remaining closed fractures united in an average of 13 weeks He urged concentration on the quality of end-results rather than on the time taken to reach them Continuity of treatment by one unit was the essential requirement He and other speakers deprecated the late reduction occasioned by the slow movement of patients from one hospital to another

Dietetic factors were discussed by Mr R I STIRLING (Edinburgh), with particular reference to the important part played by vitamin C

REHABILITATION

On Friday afternoon, May 29, the association visited the RAF Rehabilitation Centre at Hoylake, by kind permission of the Air Ministry, and members were conducted round the gymnasium, playing fields, swimming pool and so on Mr WATSON-JONES gave a clinical demonstration at which he stressed the importance of carefully graduated muscle exercises, carried out initially under the guidance of the medical officer and later in the gymnasium under the control of a group of physical-training instructors and masseuses, and the value of various outdoor games in which the competitive team spirit was encouraged Flight-Lieutenant HAROLD CANTOR described the working of the centre and the importance of the patient's treatment being kept under the close supervision of a medical officer at all stages Finally Squadron-Leader DAWES, the commanding officer, said how important it was to recreate mental and moral fibre in addition to restoring patients to full physical fitness

AMPUTATIONS

On the second day of the meeting a discussion was held on amputations, based on the different views held by surgeons in Canada and Great Britain The former attitude was stated by Dr A B LE MESURIER of Toronto The Canadian preference for end-bearing stumps for leg amputations was founded on the excellent results and superiority of this type, compared with those depending on lateral bearing in the socket of an artificial limb He was surprised to find Syme's amputation so universally condemned in Britain

Dr R D L KELHAM (Roehampton) explained the views of the limb-fitting surgeons for the Ministry of Pensions, remarking on the large number of Syme's amputations performed in the last war which had been re-amputated at a higher level Many of these patients had been unable to tolerate end-bearing for more than eight years, and of those which had had re-amputation performed not one had failed to express his gratitude at being provided with a stump which gave complete confidence A particular advantage was the better appearance of the limb, which was of importance to a woman

Mr W A COCHRANE (Edinburgh) pleaded for further consideration by British surgeons of the advantage of Syme's amputation

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The following brief communications were made Transtrochanteric Fracture of the Femur, by Mr Norman Capener, Rate of Regeneration of Peripheral Nerves, by Prof H J Seddon, Fractures of the Femur, by Mr W S Diggle, and Air Arthrography in Lesions of the Semilunar Cartilages, by Mr C H Cullen and Dr G Q Chance

NUTRITION OF EXPECTANT AND NURSING MOTHERS

INTERIM REPORT OF THE PEOPLE'S LEAGUE OF HEALTH

THE People's League of Health appointed a special committee * in July, 1935, to consider the effect of the nutrition of expectant and nursing mothers on maternal and infant mortality and morbidity The committee has now completed a survey which involved the study of the records of 5022 women and which the committee believes to be more comprehensive than any similar investigation previously carried out The league had the cooperation of 10 London hospitals East End Maternity Hospital, Hammersmith Hospital (LCC), Mother's Hospital (Salvation Army), Queen Charlotte's Hospital, Queen Mary's Maternity Home, Royal Free Hospital, St Mary Abbot's Hospital (LCC), St Thomas's Hospital, Thorpe Coombe Maternity Hospital, and University College Hospital Three commercial firms—Messrs Vitamins Ltd, Crookes Laboratories and Roche Products Ltd —supplied the vitamin and mineral elements required, free of charge

The main investigation, which was carried out from March, 1938, to the end of 1939, was planned to show whether additions of vitamins and minerals to the food would benefit the course of pregnancy and labour and the newborn child In order to obtain some information concerning the type of diet consumed by the group of women to be studied, an inquiry was made among expectant mothers attending four of the hospitals which collaborated in the test, these patients included some of the women enrolled in the investigation It was not possible to make a detailed dietary survey, but nearly 1000 women filled in questionnaires recording the food they had eaten during a week This was at best a rough and ready method of assessing food consumption, but there were good reasons for believing that it would give some evidence of the nutritional level of the women during the experimental period A scoring system was adopted by which arbitrary values were given to express the daily consumption of the more important foodstuffs, such as milk, butter, wholemeal bread, fresh vegetables, fatty fish, fruit, eggs, &c By making a sum of the weekly score for appropriate foods, approximate estimates could be made of the intakes of first-class protein, vitamins, minerals, &c, while from a general summation a picture of the diet as a whole was obtained This procedure was sufficient to reveal any well-marked deficiencies in the diet A somewhat similar scoring system has recently been found of great practical utility in nutritional investigations in Toronto

Analysis of the records showed that, in general, there was no well-marked deficiency of first-class protein among any of the women answering the questionnaires As regards minerals, a shortage of calcium was noted in about 70% of the women, most of whom were consuming insufficient milk and cheese Iron deficiency was even more serious, only 2% of the women having a satisfactory intake As regards vitamins, the deficiency of A was the most common, this being anticipated from comparison with other pre war data Rather more than half of the women were taking less vitamin A than they required Generally speaking the diets were not badly defective in vitamin B_1, but nearly half the women were not obtaining as high an intake as was really desirable Vitamin C shortage also affected about half the women, but once again the deficiency was not nearly so great as had been expected The general impression was that the women were on the average better nourished than had been expected from previous surveys of comparable groups of the ordinary population Many of the women were clearly following advice given at the antenatal centres, and fresh fruit and eggs frequently entered into their daily diet The same was true of milk The women said they were taking these foods especially because they had been advised that the health of their babies would thereby be improved There were, however, instances in which the dietaries were grossly defective

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* The executive committee included nine fellows of the Royal College of Obstetricians and Gynæcologists Prof JAMES YOUNG (British Postgraduate Medical School), chairman, Miss MARGARET BASDEN (Mothers' Hospital, Salvation Army) Prof. F J BROWNE (University College Hospital), Prof AMY FLEMING (Royal Free Hospital), Dame LOUISE MCILROY (Thorpe Coombe Maternity Hospital), W C W NIXON (St Mary Abbots, Hospital, LCC) medical secretary, W H F OXLEY (East End Maternity Hospital), L CARNAC RIVETT (Queen Charlotte's Hospital) and JAMES WYATT (St Thomas's Hospital), and the following H DAVIS PHD, PHC (pharmacist UCH), Prof J C DRUMMOND (professor of biochemistry, University College, London), Miss LETITIA FAIRFIELD, MD, (senior medical officer, LCC), W T RUSSELL, FSS (statistician, London School of Hygiene), Miss JEAN WISHART SRN (Queen Mary's Maternity Home) and Miss OLGA NETHERSOLE (founder and honorary organiser, People's League of Health)

The committee next decided on the amounts of vitamins and minerals required to make up the deficiencies noted The daily supplements used for the experiment were

Saccharated iron carbonate, gr 18 (1 2 g), equivalent to 0 26 g ferrous iron

Calcium lactate, gr 30 (2 g) equivalent to 0 26 g calcium

Minute quantities of iodine, manganese and copper

Adsorbate of vitamin B_1 containing all factors of the B complex (B_1 content standardised at 200 I U per g) gr 15 (1 g)

Vitamin C (ascorbic acid), 100 mg

Halibut liver oil (vitamin A, 52,000 I U per g and vitamin D 2500 I U per g), min 6 (0 36 g)

In each hospital the women enrolled at the antenatal clinic were divided into two main groups by placing them alternately on separate lists The women in one group received the supplements, while those in the other were kept as controls Within each of these groups the women were further classified into primigravidæ and multiparæ These two groups were again subdivided into women under 25, between 25 and 30, and over 30 years All women who were not in good health or whose delivery was expected in less than 16 weeks were excluded from the experiment

The groups of important records thus obtained have been analysed by Mr W T Russell, the statistical member of the committee, and his assistants, but the extent of the material collected and the exigencies of the war have made it impossible to prepare a full report at present In view, however, of the importance of certain facts which have emerged it has been decided to issue this preliminary report

TOXÆMIA OF PREGNANCY

At the beginning of the research it was decided to regard as toxæmic (*a*) women who exhibited hypertension (a systolic blood-pressure of or above 140 mm Hg or a diastolic pressure of or above 90 mm Hg) with or without albuminuria, œdema, &c , and (*b*) women who had no hypertension but in whom the diagnosis was based on albuminuria In the 1530 primigravidæ who received the supplementary diet the toxæmia-rate on this standard was 27 1%, while in 1512 primigravidæ who did not receive the supplementary diet the rate was 31 7%, the difference being 4 6 ± 1 7% This result was due to the dominating influence of the women aged 25–30, in whom the difference was 7 7 ± 2 6% At the younger and older ages the difference, although still favouring the treated groups, was statistically unimportant In multiparæ there was no difference between the two groups, the incidence of toxæmia being 21 8% in both 980 treated and 999 controls

Within recent years it has come to be recognised that a diagnosis of toxæmia cannot be based on hypertension by itself, for this often connotes not a true or specific pregnancy toxæmia but an essential hypertension The exclusion from the above groups of women with hypertension as the sole clinical abnormality leaves those in whom the diagnosis of toxæmia is based on albuminuria, œdema, &c , with or without, but generally with, hypertension This treatment of the figures may exclude some cases in which the hypertension is due to toxæmia but any such disadvantage is offset by the fact that, apart from any possible differential benefit derived from the supplementary diet in one group, each group is being similarly treated It has the advantage of segregating for special study those cases in which the diagnosis of toxæmia rests on a reasonably secure foundation On this basis the primigravidæ who received the additional dietary ingredients had an incidence of toxæmia of 5 4%, while in the primigravidæ who did not receive any additional diet the percentage was 7 4 The difference and its standard error was 2 0 ± 0 9, which means that the odds are nearly 40 to 1 against such a result being obtained by mere chance The figures were also favourable to the parous women receiving the supplements but not to a significant degree, the percentages being 3 6 for treated and 5 2 for controls, and the difference 1 6 ± 0 9 (see table) The women receiving the special diet are therefore protected against the risk of toxæmia in a ratio which is almost 30% When it is remembered that, next to puerperal sepsis, toxæmia constitutes the most important cause of the maternal death-rate (about a fifth of the total), in addition to being one of the most fertile sources of chronic ill health after childbirth, the findings become highly significant This investigation has been carried out in the London area, in which the incidence of toxæmia is low, and a reduction of 1 8% has been obtained If a similar reduction could be obtained for the whole country it is estimated, on the basis of the annual number of births (approximately 600,000 in the immediate prewar years in England and Wales), that there would be 10,000 fewer cases of toxæmia in the year

—	No of women	Hypertension only		Albuminuria with or without hypertension		Hypertension with albuminuria, &c (“ pre-eclampsia ”)	
		No of cases	Percentage	No of cases	Percentage	No of cases	Percentage
Primips—							
Treated	1530	332	21 7	83	5 4	69	4 51
Controls	1512	368	24 3	112	7 4	97	6 42
Diff (C–T), and SE			2 6 ± 1 5		2 0 ± 0 9		1 91 ± 0 82
Multips—							
Treated	980	179	18 3	35	3 6	31	3 16
Controls	999	166	16 6	52	5 2	46	4 60
Diff (C–T), and SE			1 7 ± 1 7		1 6 ± 0 9		1 44 ± 0 87
Total	5021	1045		282		243	

SE = standard error

In a further classification based on the criteria generally accepted for “ pre-eclampsia ”—namely, hypertension with albuminuria, œdema, &c —the following toxæmia-rates were obtained treated primigravidæ 4 51%, untreated primigravidæ 6 42%, difference 1 91 ± 0 82 , treated multiparæ 3 16%, untreated multiparæ 4 60%, difference 1 44 ± 0 87 (see table)

THE INFANT

Prematurity —The committee found evidence, which it regards as statistically significant, of benefit to the infant from the improved diet of the pregnant mother The chances of a woman carrying her child to term are improved by the diet Thus, out of 1529 primigravidæ receiving additional diet, in 308 or 20 1 ± 1 10% the pregnancy ended prematurely (before the 40th week), while in 1512 primigravidæ who did not receive any addition prematurity occurred in 361 or 23 9 ± 1 10% The figures for multiparæ were almost the same—20 1 ± 1 33% for treated and 24 2 ± 1 33% for untreated The differences in both instances are greater than mere chance fluctuations The relatively greater proportion of deliveries at term among the treated women is of particular importance in view of the Registrar-General's finding that 50% of infantile deaths under one month are due to prematurity

Birth-weight of baby —For primigravidæ of all ages the difference is slight—7 18 ± 0 03 lb for the treated as against 7 17 ± 0 03 lb for the controls, but a similar comparison for age 30 and over reveals a wider range, the babies of treated mothers weighing 7 17 ± 0 7 lb as compared with 6 99 ± 0 07 lb in the controls The difference here is 0 18 lb , which approaches significance In the multiparæ of all ages the difference between the birth weight is 0 07 ± 0 05 lb , which is not significant, but the trend of the values favours the treated women, for in 3 out of the 4 age-groups their babies were slightly heavier There is a considerable difference in the average birth-weights in different hospitals In hospital B the mean value was 6 98 lb for babies of primigravidæ, against 7 22 lb and 7 42 lb in hospitals G and J The corresponding weights in the multiparæ class were 7 43 lb , 7 82 lb , and 7 89 lb The differences between these mean weights are statistically significant and the deviations merit further investigation

OTHER EFFECTS

The committee could not find any evidence that the vitamin and mineral additions to the dietary appreciably affected the risk of fever and sepsis after childbirth Nor did they find any appreciable influence on the character and duration of labour

An additional investigation under a special subcommittee with Sir Norman Bennett as chairman was arranged to study the effect of the special dietary on the teeth of the mothers It was possible to carry out the investigation in only 314 cases, at the East End Maternity Hospital, Hammersmith Hospital, the Royal Free Hospital (Eastman Clinic), St Thomas's Hospital and Queen Mary's Maternity Home The results were inconclusive One of the objects of the research was to see the effect on the teeth of the babies born of those mothers who had received the supplementary maternity diet, and it was planned to do this by means of a "follow-up" process of the children for five years, but owing to the war this was impossible

COMMENT

The committee emphasise that the investigation could not be expected to discover the full extent of the benefits of a well-balanced diet in the antenatal period They had to avoid the risk that vitamins and minerals intended for the mother would be merely added to the general family stock, the substances were therefore given in tablet or capsule form Moreover, as was to be expected, some women defaulted It may further be urged that the full value of such protective substances can be realised only when they are given in the form of natural foods For these reasons the committee feel that the results of the investigation, valuable as they are, should be regarded as pointing to the minimal rather than the maximal advantages of a well-balanced maternal dietary It should also be mentioned that the results obtained concerned women whose basic diet was probably somewhat better than that of similarly constituted groups of women at the present time

This comprehensive and controlled investigation furnishes for the first time clear evidence on questions which have long been in dispute The demonstration of the influence of a well-regulated diet on the health of mothers and on the development and well-being of their infants is of national importance Further, the message is addressed to all sections of the community, for it is not solely among the poorer classes that defective nutrition is prevalent At the same time, since poverty and malnutrition march hand in hand and since the poorer classes are relatively the most fertile, it follows that the ravages of faulty maternal nourishment fall with tragic emphasis on the mothers in poor homes and their children

The committee are indebted to Miss Gladys Kitchener, secretary of the People's League of Health, and to the secretarial staff for their work in this research

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Reviews of Books

Year Book of General Therapeutics, 1941

Editor O W BETHEA, M D, professor of clinical medicine, Tulane University School of Medicine Chicago Year Book Publishers, London H K Lewis Pp 520 16*s* 6*d*

THIS volume is one of the most useful of a useful series Its aim being to present a full and concise account of new work in the various fields of treatment the main problem has been one of selection In this the editor's task has been lightened by war-time diminution in the volume of research and the number of foreign medical journals A large part of the new matter—about a fifth of the book—naturally deals with the sulphonamides, as the editor remarks, a collection of articles on this subject alone would easily constitute a fair-sized library The summaries and comments he has chosen are of real value Sulphathiazole is described as the most important sulphonamide in use and the drug to be preferred in almost all situations where chemotherapy is required Little mention is made of sulphadiazine, the newest of the group, but comparable figures are given of therapeutic results and toxicity in large series of cases treated with the other preparations The section gives a good summary of the present sulphonamide position, despite only one small reference to the use of sulphaguanidine in bacillary dysentery—an important omission in view of the wide need for dysentery control in war-time The sections on vitamins are also useful, and the accounts of vitamin-B complex are particularly good Papers are included on the use of synthetic vitamin K in cases of jaundice, and hypothrombinæmia with hæmorrhage, and of vitamin E (tocopherols)—applications as yet of more interest to the research worker than the general practitioner Practical methods in blood transfusion, intravenous and spinal anæsthesia and the red cell sedimentation-rate are set out, and information of the bromsulphthalein and other tests of liver function The use of phenothiazine in treating threadworms is noted but no mention of the serious toxic effects was possible before the date of publication, no doubt next year's volume will remedy this Amphetamine, atropine methylnitrate ('Eumydrin'), sodium diphenylhydantoinate ('Epanutin'), vaccine treatment of undulant fever, shock treatment of mental diseases, the treatment of burns and an account of synthetic ductless gland preparations, particularly testosterone and stilbœstrol, give some indication of the wide range of subjects covered It is never easy to judge fully the results or value of newly advancing therapeutics, at least as much cautious assessment is needed as the editor has given to this important volume

Adolescent or Ankylosing Spondylitis

S GILBERT SCOTT, M R C S, F F R, D M R E, consulting radiologist to the London Hospital, and hon radiologist to the British Red Cross London Humphrey Milford, Oxford University Press Pp 132 15*s*

THE late Dr Gilbert Scott's short monograph deals with his experience of a crippling disease, usually regarded as rather rare, at the Charterhouse Rheumatism Clinic, however, he detected some 300 cases over 10 years, and he emphasised the importance of early diagnosis at a stage when wide-field X-ray therapy may arrest progress of the disease Orthopædists and physiotherapists should be familiar with this subject, if the claims for wide-field therapy are substantiated this monograph will have served a good purpose

Massage, Manipulation and Local Anæsthesia

JAMES CYRIAX, M D Camb, assistant medical officer, physiotherapeutic department, St Thomas's Hospital London Hamish Hamilton Medical Books Pp 302 12*s* 6*d*

IN this little book Dr James Cyriax describes the methods which he and his colleagues use to treat minor injuries and disease He surveys the principles and technique of massage, mobilisations and general anæsthesia, and gives a useful chapter on referred pain He makes considerable use of procaine anæsthesia, not only in the Steindler test for establishing the site of referred pain, but to confirm diagnosis, as a therapeutic measure (following Leriche's technique), and to distinguish between neurosis and malingering Detailed directions are given for examining structures—muscles, tendons, ligaments and capsules—which may be giving rise to pain Conditions are arranged according to regions, and the chapter on sciatica is specially clear and full He recommends orthodox treatment for most things, and describes it well, but it is a pity that he did not give more detail of the technique of procaine therapy which has shown such excellent results He advocates early aspiration for effusions into the knee-joint in which most surgeons will support him, but he is not likely to find general agreement with his view that massage should be given next day Nor with another statement that adductor sprains invariably occur at the femoral insertion, they are usually found at the pubic attachment of the muscle The chief value of the book is the emphasis it lays on accurate diagnosis of minor aches and pains generally labelled lumbago, backache or muscular rheumatism These lesions, he insists, can be diagnosed accurately and he tells how Once diagnosed, they can usually be readily cured, he holds, by the methods he advises

THE LANCET

LONDON SATURDAY, JULY 4, 1942

SOLDIER'S DOCTOR

A MOTHER has been heard to rejoice because her doctor son is still a civilian " So many of his friends are in the Army learning absolutely nothing " Others have noted the attitude among their medical colleagues of ' Keep out as long as possible, it's no good to me ' If this attitude is common to the nation it is grave, if it is special to our profession it is unworthy of it, though there are extenuating circumstances It is said that there is little clinical medicine to be done in the Services " I have been with a field unit for three months and have never had more than three hours of medical work in one day " This fallacy arises in part from our having learned our medicine on patients already suffering from or at least suspected of suffering from serious disease, in part from the influence of the leaders of our profession, who spend their lives treating such No clinical medicine ? What is the proper name for the task of keeping a thousand men fit ? Sometimes these are the close-knit family of a battalion, sometimes the scattered clan of a transport unit, sometimes an incoherent group of many details These provide a great variety of practice if they are to be kept well It is a new type of clinical medicine from what the MO learnt as a student and needs a complete mental switchback which is one reason why the MO must be young, for if the mind of youth cannot switch none can Thus the MO may learn the kind of medicine which includes the giving of advice to the healthy human being in every detail of his daily life, from when he wakes to when he wakes again And when the soldier first goes sick he does so for the complaints which in civil life would be attended to by his mother or his wife, or perhaps by the pharmacist at his shop This again is clinical medicine, but at a stage that even the GP does not see In the military hospital, too, there is a different emphasis Here are congregated many ailments which in civil life would have meant a man dropping in on his panel doctor on the way home from work, or at most staying home from work for a day or two No civilian hospital would spare a bed for these cases, but the MO will find it worth while and not always simple to nip such ailments in the bud, to restore poise and confidence, and to make a man fighting fit without delay.

How can it be said that a doctor learns nothing in the Forces—unless he has lost the power to learn ? Professional knowledge is not enough to make a first-class army doctor He must know how to prevent disease, how to maintain the morale of troops, how to evacuate and treat the wounded quickly For his own safety he must be expert in field craft and be able to use map and compass like a scout But on the professional issue where can he get a quicker grasp of the slighter forms of sickness which with the increasing emphasis on prevention must come to fill a larger and larger part in clinical medicine ? It is a serious criticism of medical education if it has taught us that the only things worth learning are further details about pathological lesions and therapeutics And there is another item on the balance sheet To see the world, to meet men outside his own profession and his own upbringing, with different trainings and other aims in life these are a form of education as valuable as years of hospital appointments Most doctors now passing out of middle age will agree that the experience they gained in the last war left them better doctors than they could have been without it

CHEMOTHERAPY OF INTESTINAL INFECTIONS

UNTIL a year ago the treatment with drugs of bacterial infections of the intestine had been a dismal failure Substances which in the test-tube were actively bactericidal to the coli-typhoid organisms failed in experimental feeding tests to have any effect on the intestinal flora of mice, and since it is impossible to reproduce in animals infections simulating the natural intestinal diseases of man, experimental work on the action of various sulphonamides on the intestinal pathogens in vivo had little practical value Although sulphapyridine and sulphathiazole were found on clinical trial to have some curative value in bacillary dysentery, these drugs have the disadvantage, as far as intestinal infections are concerned, of being readily absorbed from the bowel and perhaps of being renal irritants in dehydrated patients with oliguria The introduction by MARSHALL and his colleagues of a sulphonamide compound, which while chemotherapeutically active was poorly absorbed, therefore heralded a real advance in intestinal antisepsis This drug, sulphaguanidine, has now been used in most of the intestinal infections; the results so far obtained were reviewed by Dr ROBERT CRUICKSHANK in opening a discussion on the subject at the RSM on June 9 The field is a wide one If typhoid fever is a disappearing disease, it is being replaced by the milder paratyphoid, Sonne dysentery is now a prevalent endemic infection in this country and outbreaks of Flexner dysentery are still too common in institutions Gastro-enteritis with hospital fatality-rates of 30–50% exacts a high toll of infant life, and that obscure and intractable disease, ulcerative colitis, still causes misery to many a man and woman

The treatment of typhoid and dysentery should have as its objectives bacteriological as well as clinical cure for the convalescent carrier state is common in both infections and may persist for weeks after clinical cure with detriment to the community Therefore in assessing the value of sulphaguanidine in these infections a bacteriological control using modern selective media should form part of the investigation On this basis the drug has failed completely in typhoid and paratyphoid fever HALL[1] in New Orleans treated 20 cases of typhoid with 20 controls, and found no significant difference in clinical course, complication-rate and duration of infectivity in the two series, two " intractable ' carriers were left in the treated group Dr PAUL BEESON[2] treated a series of 40 cases of paratyphoid with 48 controls in the recent Liverpool outbreak again, there was no response, clinically or bacteriologically, to the drug In dysentery, on the other hand, the results have been excellent Following the preliminary report of **Marshall** and his colleagues, **Anderson** and **Cruickshank**[3] treated 41 cases of Flexner dysentery with 55 controls in a LCC mental hospital, and despite small dosage reported good results both clinically and bacteriologically They found that not more than a quarter to half of the drug was excreted in the urine, and toxic effects were, with the exception of one rash, absent Their findings have been corroborated in the treatment of another series at the LCC North-Western Hospital It is particularly noteworthy that of 34 treated patients whose fæces were bacteriologically examined on desoxycholate citrate agar twice weekly only one gave positive cultures after the course of sulphaguanidine and he was probably reinfected, whereas 12 out of 31 untreated cases continued to excrete the Flexner organism for 10–40 days after onset Six of these untreated cases and two persistently positive symptomless carriers became bacteriologically negative within a few days of beginning a late course of sulphaguanidine In America, **Hardy** and his colleagues[4] have reported excellent results from the use of the drug in both clinical cases and carriers infected with Flexner organisms, so that the eradication of this infection from mental hospitals and other institutions is now a practical possibility

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[1] Hall W M *Med surg J* 1941, 94 283

[2] See Holt H D Vaughan, A C T and Wright, H D *Lancet,* 1942, i, 133

The Army Medical Directorate[5] in its latest bulletin is enthusiastic about the drug in the treatment of severe Shiga dysentery With massive doses the outstanding clinical effects were a feeling of well-being within 24–48 hours with relief of abdominal pain and tenesmus, reduction of temperature and pulse-rate to normal in 1–3 days, reduction in the number of stools to normal in 5–6 days, and the rapid disappearance of blood, although mucus may persist for some time All workers agree that the earlier treatment is begun the better the clinical response and the more rapid the convalescence Doses of 50,000–100,000 units of concentrated Shiga antitoxin should be given intravenously to fulminating toxic cases of Shiga dysentery In the usually mild Sonne infections, where diarrhœa may last only for a day or two, chemotherapy is mainly directed to a bacteriological cure of the convalescent carrier and the results have not been particularly good For example, at the North-Western Hospital 4 out of 24 treated cases remained positive after the tenth day compared with 6 out of 18 untreated cases The dosage used in these and in the Flexner infections was 3 g thrice daily for 3 days followed by 3 g twice daily for 4 days in adults and half that dosage in children **Marshall** recommended an initial dose of 0 1 g per kg of body-weight and maintenance doses of 0 05 g per kg four-hourly until the diarrhœa was controlled when the same dose was given eight hourly for another few days In the Army, 20 g per day is given for severe infections, with a total dosage of 135 g While these massive doses may be required for severely ill patients, and might be tried to effect cure of the convalescent Sonne carrier, there is no doubt that the smaller doses control the less severe Flexner infections It is probably important in dysentery to give large doses infrequently in order to attain the maximum concentration of the drug at the seat of infection in the large bowel. Adequate fluids must be given to maintain a good renal flow.

There have been few reports on the use of the sulphonamides in the non-specific gastro enteritis of infants **Cooper**, **Zucker** and **Wagoner**[6] had no success from the use of sulphathiazole in gastroenteritis, and a limited experience with sulphaguanidine in this infection and in bacterial food-poisoning has been disappointing More benefit may come from the use of yet another new sulphonamide, succinyl sulphathiazole (or sulphasuxidine) which has in a proportion of cases entirely eliminated *Bacterium coli* from the intestinal tract The treatment of ulcerative colitis with sulphaguanidine by mouth has given variable results In **Cruickshank**'s experience a few moderately ill patients showed complete remission of symptoms but severe infections were unaffected **Bargen** and **Dearing**[7] reported clinical cure or improvement in 32 out of 46 cases, many of whom had been given other therapies Sir **Philip Manson-Bahr**, at the RSM discussion, advocated the use of retention enemata containing 7–10 g of the drug in 7 oz of water or mucilage, with morphine or phenobarbitone as a bowel-sedative In the treatment of amœbic dysentery, which masquerades under a variety of diagnoses, he pointed out that emetine, while an excellent drug for controlling an acute infection or metastatic complications, was ineffective against the amœbic cysts and therefore did not often effect complete cure To do so, he relied on 2-grain doses of emetine bismuth iodide given at night in hard gelatin capsules for 8–10 days combined with chiniofon (better known as 'Quinoxyl' or 'Yatren') given as a 2½% solution rectally Mention was also made of infection with *Giardia intestinalis*, which from its pullulation in the duodenum and possibly in the bile-ducts may initiate a subacute catarrhal enteritis, and for which mepacrine hydrochloride is apparently a specific remedy

FIRM BASIS FOR CHALK IN BREAD

In his work on rickets with dogs, **Mellanby** has long maintained that cereals contain a powerful rachitogenic agent which, in his paper with **Harrison**,[8] he concluded to be phytic acid It was not certain how far this conclusion applied to human beings, and no practical application of it has been recommended until recently In 1940 **McCance** and **Widdowson** completed an experiment with a simplified war-time dietary containing much flour of 92% extraction They have elaborated a model technique for long-term metabolic studies on human subjects, by which they and a group of their colleagues live, if necessary for months, on the experimental diet In this particular experiment the subjects maintained good health and working capacity, but when the results were analysed there was a suspicion that they had not been in positive calcium balance The doubt was a grave one and had to be settled The task of settling it was arduous but **McCance** and **Widdowson**, with their volunteers, tackled it[9] The chief question they set themselves to answer was

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[3] Anderson, D E W, Cruickshank, R *Brit med J* 1941, ii 497

[4] Hardy A V Watt J Peterson J and Schlosser, E *Publ Hlth Rep*, *Wash* April 10, 1942, p 529

[5] *Army med Direct Bull* No 9 February, 1942

[6] Cooper M L Zucker, R L amd Wagoner, S *J Amer med Ass* 1941 117, 1520

[7] Bargen J A and Dearing, W H *Proc Mayo Clin* 1942 17, 40

[8] Harrison D C and Mellanby, E *Biochem J* 1939 33 1660

[9] McCance, R A and Widdowson E M *J Physiol* 1942, 101, 44

Do men and women absorb calcium less freely rom brown than from white bread dietaries ? " And if so, " Is phytic acid the noxious agent ? " They posed a number of subsidiary questions bearing on the nation s housekeeping So well were the questions chosen and the experiments planned that a fine harvest of clear answers was reaped All the subjects absorbed less calcium on the brown-bread diet than on the white, all who were in positive calcium balance on the white bread were in negative balance on the brown, and all who were in negative balance on the white were in a balance still more negative on the brown The answer was unequivocal The effect was reproduced by substituting white bread with added sodium phytate for the bread from 92% extraction flour Both the main questions were thus answered in the affirmative, a serious position was revealed and it was clear that something ought to be done about it Nutritional experts were pressing on nutritional grounds for a greater consumption of high-extraction flour At any time the blockade might make a change to a flour of higher extraction a necessity All the arguments were for lengthening the extraction save this one—that there was a risk to health by putting the population into negative calcium balance

Further experiments showed that there was a cheap and easy remedy by adding chalk to bread the situation could be saved The explanation of the whole matter seemed to be that the amount of phytic acid in flour increases with the degree of extraction, and that its effect is to precipitate the calcium, and incidentally some other salts, not only in the flour but also in the rest of the diet The magnitude of the danger depended on the relative amounts of phytic acid and calcium in the whole diet With a diet rich in milk and cheese, much brown bread, oatmeal and other cereals rich in phytic acid can be eaten with impunity, but unfortunately diets rich in milk and cheese are generally those which are low in bread, and those rich in bread are usually low in dairy products Correction could obviously not be made, at any rate in war-time, through any regulation of the supply of ordinary foodstuffs The remedy must be by addition of some cheap salt of calcium, not unpalatable, easily miscible and easily obtainable in the requisite quantities The carbonate and the monohydrogen phosphate were tested on the experimental subjects, the phosphate had no metabolic advantage and made a slightly less palatable bread The carbonate was cheaper and more plentiful, so the verdict was in its favour

The amount of chalk which should be added to a sack of flour depends on a number of considerations, of which the first is the extraction of the flour Having decided how much calcium is needed to " make safe " the given type of flour, we are next met by the question, " Shall we take advantage of the opportunity to add more than that calculated amount of calcium in order to neutralise any other phytic acid in the diet, and in addition bring up the calcium content of the whole diet to a level at which the human requirement of calcium, whatever we may have calculated that to be, is fully covered ? " This is a controversial question of great importance and McCance and Widdowson do little more than indicate its existence They do, however, stress the rather new concept that the quality and quantity of the cereal component of a diet should be taken into consideration in assessing the adequacy of its calcium content The recommendation they make is that calcium should be added to flour in an amount just sufficient to neutralise its phytic-acid content To achieve this purpose the amount of calcium, as calcium carbonate, to be added to every 100 g of flour should be for 69% extraction white flour 65 mg, for 85% extraction National flour 120 mg, and for 92% extraction " wholemeal " flour 200 mg The added calcium thus consumed in 1 lb of " wholemeal " bread would be rather less than that in a pint of milk The decision which the Ministry of Food has taken is to add enough calcium to National flour to reduce its calcium-immobilising activity to that of white flour, and, though there are dissentients, some of whom feel strongly about it, the majority of nutritionists will agree with Bacharach[10] in supporting this measure until a rise in our consumption of milk and other dairy produce can render it unnecessary

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Annotations

WITH THE EIGHTH ARMY

As the battle swung to and fro in Libya the medical services learnt new ways of meeting the needs of the wounded Last week (*Lancet*, June 27, p 766) we quoted the views of Colonel Julian Smith, acquired during the 1940 campaign Notes compiled from the reports of the consulting surgeon and the consulting orthopædic surgeon with the Middle East Forces between October and December, 1941, tell us something of the experience gained in another year's fighting[11] During the Eighth Army offensive which began last November the enormous area to be covered made it impossible for the surgeons to keep in continuous touch with the base, news—and examples—of their handiwork filtered back with casualties Ambulance cars had to be " navigated " across the desert, even for distances as short as 30 miles As soon as the base hospitals received a convoy the divisional surgeons were asked to report on the condition of patients on arrival, and their comments were passed on to Army medical officers None of the surgeons in the battle zone became casualties though they worked under fire and sometimes even as captives The enemy, it seems, respects the Red Cross " so long as it does not conflict with his interpretation of the needs of the tactical situation " Apart from the enemy and his interpretations, surgeons were hampered by delay in communications, by the priority demands of the fighting forces for transport, by shortage of water, and by lighting problems in the operating tents The delays were mainly between administrative headquarters and units, or between sections of units When touch was lost cases would collect and flood a centre for hours before help could reach them Shortage of water had been foreseen but was none the less awkward when it came to sterilising instruments and washing towels It was necessary at times to operate by the light of hurricane lamps or signal flash-lamps with a lead to the lorry battery Records are frankly described as bad—" surgeons will not write legibly and print their names " This, a harmless foible in peace-time, can mean trouble for a patient who arrives at the base without a legible line to say what has been done beneath the plaster or what doses of sulphonamide he has received More messages could have been written on the plasters themselves, it was felt, a plan ensuring culous—can produce a phlycten The evidence for these conclusions comes from an elaborate research at the White Oak Hospital, Swanley, extending over the six years 1935–40, in which radiological evidence of tuberculosis was found in 72% of phlycten cases, against 12% of controls (blepharitis patients admitted to the same hospital) The interpretation of doubtful radiograms of the chest must be subject to the personal factor, and certainly few observers have found anything approaching this high figure, but much other evidence is forthcoming, and as sifted and presented by Sorsby it does seem to show that tuberculous infection can act as the sensitising agent of phlyctenular ophthalmia If so, sufferers from phlyctens must be regarded as in a dangerous state of health and needing antituberculous treatment

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[10] Bacharach A L *Lancet* June 27, 1942 p 780

[11] *Army med Direct Bull* No 11, May, 1942 p 7

USE AND ABUSE OF THE ELECTROCARDIOGRAM

OUR American colleagues are concerned about the uses to which the electrocardiogram is being put, and the American Heart Association has received requests from responsible cardiologists asking for measures to ensure that practitioners can find out whether a consultant is competent to interpret electrocardiograms Over here the problem has never been so serious, but there is a tendency for too much to be read into electrocardiograms Workers at Yale,[1] in an attempt to assess the clinical value of electrocardiography, and the significance of its increased use, have analysed the electrocardiograms taken at their hospital during the last 12 years They found that, while the mortality from heart disease has risen rather less than 20%, the number of electrocardiograms taken per 100 medical patients has more than doubled (15 5–38 9%) During this period the percentage of abnormal electrocardiograms increased from 58 9 to 66 6, suggesting that electrocardiography was not being wasted on patients without heart disease They compared a fair selection of electrocardiograms from a year when relatively few were taken with a similar selection from a later year in which twice as many were taken , they found that in the later year the percentage of insignificant records was smaller, and the percentage of clinically helpful records higher, than in the earlier year They also recorded electrocardiograms in 400 patients for whom electrocardiography was not requested by the physician in charge , 78% of these showed abnormalities which were wholly unexpected after careful clinical examination They naturally conclude that the increasing use of electrocardiography is justified by the results, though they admit that it is not desirable as a routine It should be noted, however, that their results are based on the findings in a large well-run hospital, where selection of cases can be made without reference to expense The problem is entirely different in general practice or in smaller hospitals Again, we encounter the old problem of the significance of slight deviations in the electrocardiogram, some of which the Yale workers accept as abnormalities Have we sufficient evidence at present that these really are abnormal ? It is here that mistakes are most commonly made, as Marvin[2] points out Such findings as low voltage curves, isolated changes in Q or T waves or the QRS complex are of no clinical significance by themselves, though in conjunction with clinical and radiological findings they may be , but to attempt to give a clinical interpretation of such an electrocardiogram without relation to the clinical evidence in the case is rash The indications for electrocardiography are wide and definite in the recognition of the arrhythmias it stands supreme , in diseases such as acute rheumatism and diphtheria where we know the heart to be affected it often provides evidence of myocardial damage which might be otherwise missed , the diagnosis of myocardial infarction often depends on serial electrocardiography, and it can be used to an disorders of conduction, though the diagnosis of bundle branch block is still too often made on insuffi grounds Moreover the scope of clinical electrocardiography is ever widening But this invaluable adjunct diagnosis, treatment and prognosis may be discr if it is delivered over to the enthusiasms of those not fully trained in its use

CLEAN HANDS

THE importance of the intact skin as a protection against the entry into the body of pathogenic organisms is well appreciated by those who handle infected wounds and similar lesions Not only does the skin present a mechanical barrier to the entry of organisms but it has the power to remove bacteria that are deliberately placed on it Colebrook[1] showed that pathogenic streptococci rapidly disappear from the hands, and that they are not killed by the simple process of drying but are apparently destroyed in some way by the skin Recently Burtenshaw[2] has tried to find an explanation of this phenomenon by making extracts of the skin and its appendages He found that they contained certain long chain fatty acids and soaps which he showed could kill streptococci in vitro While this may explain the disappearance of streptococci it does not explain the rapid removal from normal skin of a variety of other organisms, including gram-negative ones that are insensitive to soaps and fatty acids Arnold,[3] who has worked with such organisms, found that the self-disinfecting power of the skin was enhanced if the cornified layer was cleaned and freed from fat He believed that the relative acidity of normal skin might be responsible for destroying organisms placed on it Marchionini,[4] who has studied the reaction of the skin, has found its acidity to be highest in the exposed parts and lowest in the axillæ, groins, &c , where he believed the production of sweat prevents the concentration of acid from rising Arnold found that the skin of a dog that had been recently shaved had lost its power to remove organisms, and at the same time its acidity disappeared This was possibly related to microscopic damage to the cornified layers, and the skin returned to normal within 24 hours It is doubtful however whether the highest degrees of acidity recorded for the skin are enough to destroy many of the bacteria that are known to disappear from its surface These points might be further investigated, for they are of some practical importance Were the skin to lose its self-disinfecting powers surgeons and nurses might rapidly become the carriers of a variety of pathogenic bacteria Indeed, it is now recognised that a certain number do carry pathogenic strains of staphylococci The normal skin has apparently no power to remove staphylococci It is important to know how the skin should be treated in order to enhance this valuable property Excessive cleaning may remove bactericidal substances from the skin, or by keeping the corneal layers clean may allow them to act more efficiently The frequent use of the scrubbing brush may do more harm than good by damaging temporarily, at any rate, the corneal layer Another interesting point is whether the epithelium over scar tissue has the same power of removing bacteria as has normal skin Extensive scars, such as follow burns are notoriously liable to become the seat of repeated minor infections This is possibly due, in part at any rate, to the impairment of its nutrition by the contraction of the fibrous tissue beneath, or the properties of the skin itself may play a part Since this skin is devoid of the usual appendages, hair follicles and sweat glands, investigations might be able to demonstrate whether or not these structures help in removing bacteria from skin

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[1] Geiger, A J , Calabresi, M and Blaney, L F. *Amer J med Sci* 1942, 203, 219

[2] Marvin, H M *New Engl J Med* 1942, 226, 214

[1] Colebrook L Appendix to Interim Report of Departmental Committee on Maternal Mortality and Morbidity Ministry of Health 1930

[2] Burtenshaw J M L *J Hyg , Camb* 1942 42 184

[3] Arnold, L et al *Amer J Hyg* 1930 11 345 1934, 19 217

[4] Marchionini, A *Klin Wschr* 1938, 17, 663

In England Now

A Running Commentary by Peripatetic Correspondents

MANY of us, I fancy, will deplore the curtailing of the medical curriculum even as an emergency measure. This may in part be mere envy because no such privilege was accorded to us of a previous generation of medical students, but I suspect that it goes deeper than that. GP's will recall how ignorant they were when first qualified and how slowly and laboriously knowledge of the treatment and above all of the management of sick persons (and their relatives) had to be acquired. The best books on medicine are the patients themselves and 36 months is little enough in all conscience to give to clinical work, even then it has to be packed in with a great deal of extra clinical activity. If some abridgment was necessary it would, I think, have been infinitely wiser to have made it during the preclinical stage. The detailed study of anatomy, for example, is at best a mere feat of memory and at worst a stultifying experience. Most of it is soon forgotten and quite useless in general practice and I have heard even surgeons admit that its importance is grossly exaggerated.

* * *

Not long ago I had the ill luck to be sent for a short period of rest, so called, to a hospital in the throes of a quiet spell. All the casualties of the last blitz were by then discharged or required only occasional attention. The garrison troops in the area were temporarily withdrawn and things had come to a virtual standstill. As a result I was for the first time reduced to studying the art of killing time. By rising late and prolonging one's elevenses the semblance of working in the morning could be maintained. In the afternoon, when the chronic inclemency of the weather permitted it, the custom was to walk to the village about four miles away; on wet afternoons one read or slept according to inclination. During those dreadful hours between tea and dinner a spirit of restlessness seemed to possess everybody. To add to this uncertainty the afternoon mail might fail to arrive if the office boy was too busy drawing aeroplanes to sort it. If the musician of the staff received no letters he became of all men the most miserable and proceeded to hammer out the most melancholy of Chopin's preludes on the sitting-room piano in the hope that he would succeed in making others as depressed as he was. Like all true artists he was impervious alike to criticism and witticism but he knows now that it is hopeless to try to compete with the wireless turned full on. I even managed to convince him that the set was capable of switching itself on without human aid.

In the evening after the best meal of the day and in front of a comfortable fire feelings mellowed and even the musician became good enough company, provided he would leave his wretched piano alone. This part of the day was customarily employed by the staff in games of skill and chance—bridge, draughts and (tell it not in Gath) vingt-et-un. I never cared much for gambling and consequently was the proper prey of the chess enthusiast of the company. He would have made a pleasant opponent if he could have dissociated business and pleasure, but he was a pathologist and insisted on an exhaustive post-mortem analysis of every game. The more severely he was beaten the longer was the autopsy, and since I usually emerged victorious I soon found it unbearable. I once asked the junior physician where the billiard-table was, only to be told that neither he nor his colleagues had had time to loaf around the Union in their undergraduate days. After that rebuff I dared not unpack the dart-board I had brought with me. They would never have believed that I acquired proficiency in the game while on a voyage for my health.

For some reason table-tennis was considered eminently respectable and was played in season and out by all and sundry. When the medical superintendent played against the surgeon we all pretended to an appreciative interest in the decorous but herculean struggle between two master minds, but when the residents began to play there was an immediate exit of all the other occupants of the room. I used to think that this rush for safety was uncourteous if not undignified on the part of the permanent staff until one day I surprised the mess secretary in some abstruse calculations which involved the use of a slide-rule. He told me he was working out the bonuses due to his colleagues for prowess at ping-pong, it appeared that some system of extra points was allowed on the following basis. For doing violence to the person or property of anyone in the room, 2 points. For a bull's eye registered on the bald spot on the back of the surgeon's head, 5 points. For upsetting the pathologist's chess board 10 points. For knocking off the physician's pince-nez 20 points. As the residents played with abandon it is small wonder that their seniors considered discretion the better part of valour and retired on the commencement of hostilities.

I don't expect there is much time for recreation in that hospital now, for they received a train-load of casualties after the last blitz in the neighbourhood. I enjoyed my stay there and am grateful to those people for beginning a hitherto neglected side of my education.

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We badly need a proverb to sum up the fact that the obvious, unless it has actually been thought about, can still surprise us. "You never miss the water till the well runs dry" is about as near as we get, but this reflects only one aspect of the whole. Recently I have seen something of veterinary surgeons at work, and here many of the surprises were really quite obvious implications of the differences between their patients and ours. For example, if one had thought about the doses of sulphonamides needed for cattle, obviously one would have expected them to be large. But I had never given it a thought and consequently the sight of 7 lb drums of the drugs on the shelves astonished me no less than the instructions to "Give him two ounces right away." Similarly with midwifery, remembering the manual strength that is often required did not prepare me for the sight of ropes and pulleys, and the request that all the available man-power should heave hard. One object that baffled me completely was a long tube of very hard leather about the thickness of the handle of a tennis racket. This turned out to be a stomach-tube, and later I saw it used with something like the result that I imagine would follow a direct hit on a barrage balloon. These qualitative differences, however, were small compared with one difference in kind which filled me with apprehension at the thought that it might ever be applied in human medicine. An aspect of treatment that I had never considered is the relative value of the animal and the treatment. Nobody is going to give treatment worth £5 to an animal worth £1; but how awful a thought that one might have to decide whether or not Mr A's usefulness to the community justified removal of his appendix.

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It is high time that someone called the bluff on the present craze for extolling the young. The whole suggestion seems to be that if only "the young" were in control how different everything would be. Who are included in this exclusive group? Physiologically we start growing old from the moment we are conceived. We are probably at our physical prime in the early twenties. When are we at our mental prime? I was brought up by a chief who never tired of pointing out that a man's best work was done before he was 30. At the time (in my early twenties) I found this rather depressing, but I have no doubt now that, like many of his opinions, there is a great deal of truth in it, especially in the modified form that unless a man has shown promise and produced some good work before he is 30 he is not likely to be outstanding. This of course applies particularly to research. In other spheres the story may be different. Some men, for instance, mature late but nevertheless turn out better than the scintillating young man of the early twenties who is unable to maintain the pace. The real clinician may be born and not bred but for most of us clinical acumen is the result of long and often bitter experience, and the same applies to the statesman.

The young may have more generous impulses, be less bound by conventions and have more imagination, but they have not the experience of life which is essential in handling men and women. When short sharp bursts of energy and initiative are required they are undoubtedly supreme, but in long-sustained efforts such as leading a community they can only supply some of the energy, the actual leadership requires other attributes which only come with experience. One only needs to study culous—can produce a phlycten. The evidence for these conclusions comes from an elaborate research at the White Oak Hospital, Swanley, extending over the six years 1935–40, in which radiological evidence of tuberculosis was found in 72% of phlycten cases, against 12% of controls (blepharitis patients admitted to the same hospital). The interpretation of doubtful radiograms of the chest must be subject to the personal factor, and certainly few observers have found anything approaching this high figure, but much other evidence is forthcoming, and as sifted and presented by Sorsby it does seem to show that tuberculous infection can act as the sensitising agent of phlyctenular ophthalmia. If so, sufferers from phlyctens must be regarded as in a dangerous state of health and needing antituberculous treatment.

USE AND ABUSE OF THE ELECTROCARDIOGRAM

OUR American colleagues are concerned about the uses to which the electrocardiogram is being put, and the American Heart Association has received requests from responsible cardiologists asking for measures to ensure that practitioners can find out whether a consultant is competent to interpret electrocardiograms. Over here the problem has never been so serious, but there is a tendency for too much to be read into electrocardiograms. Workers at Yale,[1] in an attempt to assess the clinical value of electrocardiography, and the significance of its increased use, have analysed the electrocardiograms taken at their hospital during the last 12 years. They found that, while the mortality from heart disease has risen rather less than 20%, the number of electrocardiograms taken per 100 medical patients has more than doubled (15.5–38.9%). During this period the percentage of abnormal electrocardiograms increased from 58.9 to 66.6, suggesting that electrocardiography was not being wasted on patients without heart disease. They compared a fair selection of electrocardiograms from a year when relatively few were taken with a similar selection from a later year in which twice as many were taken; they found that in the later year the percentage of insignificant records was smaller, and the percentage of clinically helpful records higher, than in the earlier year. They also recorded electrocardiograms in 400 patients for whom electrocardiography was not requested by the physician in charge; 78% of these showed abnormalities which were wholly unexpected after careful clinical examination. They naturally conclude that the increasing use of electrocardiography is justified by the results, though they admit that it is not desirable as a routine. It should be noted, however, that their results are based on the findings in a large well run hospital, where selection of cases can be made without reference to expense. The problem is entirely different in general practice or in smaller hospitals. Again, we encounter the old problem of the significance of slight deviations in the electrocardiogram, some of which the Yale workers accept as abnormalities. Have we sufficient evidence at present that these really are abnormal? It is here that mistakes are most commonly made, as Marvin[2] points out. Such findings as low voltage curves, isolated changes in Q or T waves or the QRS complex are of no clinical significance by themselves, though in conjunction with clinical and radiological findings they may be; but to attempt to give a clinical interpretation of such an electrocardiogram without relation to the clinical evidence in the case is rash. The indications for electrocardiography are wide and definite: in the recognition of the arrhythmias it stands supreme; in diseases such as acute rheumatism and diphtheria where we know the heart to be affected it often provides evidence of myocardial damage which might be otherwise missed; the diagnosis of myocardial infarction often depends on serial electrocardiography, and it can be used to a disorders of conduction, though the diagnosis of b branch block is still too often made on insuffi grounds. Moreover the scope of clinical electrocardiography is ever widening. But this invaluable adjunct diagnosis, treatment and prognosis may be discredited if it is delivered over to the enthusiasms of those not fully trained in its use.

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THE importance of the intact skin as a protection against the entry into the body of pathogenic organisms is well appreciated by those who handle infected wounds and similar lesions. Not only does the skin present a mechanical barrier to the entry of organisms but it has the power to remove bacteria that are deliberately placed on it. Colebrook[1] showed that pathogenic streptococci rapidly disappear from the hands, and that they are not killed by the simple process of drying but are apparently destroyed in some way by the skin. Recently Burtenshaw[2] has tried to find an explanation of this phenomenon by making extracts of the skin and its appendages. He found that they contained certain long chain fatty acids and soaps which he showed could kill streptococci in vitro. While this may explain the disappearance of streptococci it does not explain the rapid removal from normal skin of a variety of other organisms, including gram-negative ones that are insensitive to soaps and fatty acids. Arnold,[3] who has worked with such organisms, found that the self-disinfecting power of the skin was enhanced if the cornified layer was cleaned and freed from fat. He believed that the relative acidity of normal skin might be responsible for destroying organisms placed on it. Marchionini,[4] who has studied the reaction of the skin, has found its acidity to be highest in the exposed parts and lowest in the axillæ, groins, &c., where he believed the production of sweat prevents the concentration of acid from rising. Arnold found that the skin of a dog that had been recently shaved had lost its power to remove organisms, and at the same time its acidity disappeared. This was possibly related to microscopic damage to the cornified layers, and the skin returned to normal within 24 hours. It is doubtful however whether the highest degrees of acidity recorded for the skin are enough to destroy many of the bacteria that are known to disappear from its surface. These points might be further investigated, for they are of some practical importance. Were the skin to lose its self disinfecting powers, surgeons and nurses might rapidly become the carriers of a variety of pathogenic bacteria. Indeed, it is now recognised that a certain number do carry pathogenic strains of staphylococci. The normal skin has apparently no power to remove staphylococci. It is important to know how the skin should be treated in order to enhance this valuable property. Excessive cleaning may remove bactericidal substances from the skin, or by keeping the corneal layers clean may allow them to act more efficiently. The frequent use of the scrubbing brush may do more harm than good by damaging temporarily, at any rate, the corneal layer. Another interesting point is whether the epithelium over scar tissue has the same power of removing bacteria as has normal skin. Extensive scars, such as follow burns, are notoriously liable to become the seat of repeated minor infections. This is possibly due, in part at any rate, to the impairment of its nutrition by the contraction of the fibrous tissue beneath, or the properties of the skin itself may play a part. Since this skin is devoid of the usual appendages, hair follicles and sweat glands, investigations might be able to demonstrate whether or not these structures help in removing bacteria from skin.

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Not long ago I had the ill luck to be sent for a short period of rest, so called, to a hospital in the throes of a quiet spell. All the casualties of the last blitz were by then discharged or required only occasional attention. The garrison troops in the area were temporarily withdrawn and things had come to a virtual standstill. As a result I was for the first time reduced to studying the art of killing time. By rising late and prolonging one's elevenses the semblance of working in the morning could be maintained. In the afternoon, when the chronic inclemency of the weather permitted it, the custom was to walk to the village about four miles away; on wet afternoons one read or slept according to inclination. During those dreadful hours between tea and dinner a spirit of restlessness seemed to possess everybody. To add to this uncertainty the afternoon mail might fail to arrive if the office boy was too busy drawing aeroplanes to sort it. If the musician of the staff received no letters he became of all men the most miserable and proceeded to hammer out the most melancholy of Chopin's preludes on the sitting-room piano in the hope that he would succeed in making others as depressed as he was. Like all true artists he was impervious alike to criticism and witticism but he knows now that it is hopeless to try to compete with the wireless turned full on. I even managed to convince him that the set was capable of switching itself on without human aid.

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We badly need a proverb to sum up the fact that the obvious, unless it has actually been thought about, can still surprise us. "You never miss the water till the well runs dry" is about as near as we get but this reflects only one aspect of the whole. Recently I have seen something of veterinary surgeons at work, and here many of the surprises were really quite obvious implications of the differences between their patients and ours. For example, if one had thought about the doses of sulphonamides needed for cattle, obviously one would have expected them to be large. But I had never given it a thought and consequently the sight of 7 lb drums of the drugs on the shelves astonished me no less than the instructions to "Give him two ounces right away." Similarly with midwifery, remembering the manual strength that is often required did not prepare me for the sight of ropes and pulleys, and the request that all the available man-power should heave hard. One object that baffled me completely was a long tube of very hard leather about the thickness of the handle of a tennis racket. This turned out to be a stomach-tube, and later I saw it used with something like the result that I imagine would follow a direct hit on a barrage balloon. These qualitative differences, however, were small compared with one difference in kind which filled me with apprehension at the thought that it might ever be applied in human medicine. An aspect of treatment that I had never considered is the relative value of the animal and the treatment. Nobody is going to give treatment worth £5 to an animal worth £1, but how awful a thought that one might have to decide whether or not Mr A's usefulness to the community justified removal of his appendix.

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It is high time that someone called the bluff on the present craze for extolling the young. The whole suggestion seems to be that if only "the young" were in control how different everything would be. Who are included in this exclusive group? Physiologically we start growing old from the moment we are conceived. We are probably at our physical prime in the early twenties. When are we at our mental prime? I was brought up by a chief who never tired of pointing out that a man's best work was done before he was 30. At the time (in my early twenties) I found this rather depressing, but I have no doubt now that, like many of his opinions, there is a great deal of truth in it, especially in the modified form that unless a man has shown promise and produced some good work before he is 30 he is not likely to be outstanding. This of course applies particularly to research. In other spheres the story may be different. Some men, for instance, mature late but nevertheless turn out better than the scintillating young man of the early twenties who is unable to maintain the pace. The real clinician may be born and not bred but for most of us clinical acumen is the result of long and often bitter experience, and the same applies to the statesman.

The young may have more generous impulses, be less bound by conventions and have more imagination, but they have not the experience of life which is essential in handling men and women. When short sharp bursts of energy and initiative are required they are undoubtedly supreme, but in long-sustained efforts such as leading a community they can only supply some of the energy, the actual leadership requires other attributes which only come with experience. One only needs to study the painfully inadequate attempts which certain groups of medical students have made to produce memoranda on the subject of medical education Catch-words, the fashions of the moment—all these are incorporated And worst of all there is a nagging insistence on their own importance and a complete lack of appreciation of what their seniors have accomplished

Since the introduction of universal suffrage the citizen has been considered capable of recording a vote at 21 What difference has this tremendous influx of the young to the electoral roll made to the membership of the House of Commons? What percentage have ever troubled to record their votes? Or, to take an example nearer home, what part do the junior members of the honorary staffs play in running our teaching hospitals? How many of them are prepared to settle down to the task of producing a reasoned scheme which will prove practical? How many have been content to produce some novel idea and then collapse like a pricked balloon as soon as any criticism was offered? Modern youth is no better and no worse than preceding generations, but I wish someone would take them in hand, reintroduce a little discipline into our life and silence their querulous whimperings Let youth pull itself together, get down to a little hard thinking and chatter less Let them realise, and their elders as well, that we are all part of a whole The ripe experience of age in cooperation with the initiative and energy of youth will go far, but youth alone will only land us in unpredictable, instead of known, dangers The present position in Germany should be an ample warning of the purgatory in which misguided youth can land a nation

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Coming over in the ship I met a captain of signals, whose hobby had become his job—pigeons He had a dozen with him and liberated them when six miles from shore They circled round for ten minutes before being lost to sight "Funny if they refused to leave you," I said "They do home back to their basket sometimes if they're flighted too often," he answered He said, and I put it in my "awaits confirmation" box, that pigeons never flight in the dark, they come down wherever they are He also said there were too many peregrines about

In the train I sat opposite a young man who had come down to see his sick father Pain over the heart and down the left arm, dyspnœa at night, sounded bad enough The doctor had warned him for anything, but wisely had not branded it with a name He himself was an asthmatic, but I think I might have deduced that from the shoulders and keen, anxious eyes In 50 miles he gave me a brief résume of all the treatments he'd had since boyhood The best one was living in London He was a designer and has turned over to precision instrument making and is on night-work He is very struck by the immutable methodicalness of the professionals, everything has to be in its exact place on the bench He said that their union meetings for which they had time off generally resolve themselves into personal wrangles between the elder men as to who had the most experience and so on His hobby is painting and he has literary aspirations We changed trains together and got into a darkening carriage with five sailors They had been torpedoed and were longing to tell us more about it, but didn't Expansion is so much commoner with the English than repression They'd switched off the light, so that they could have the curtain up and the window open—a touch of claustrophobia here Expansion and claustrophobia are, I suppose, mental states which protect the herd against the individual, repression and agoraphobia protect the individual against the herd, most of us keep an uneasy balance The carriage grew darker My first friend's head rested on my shoulder and I could feel his troubled breathing—his father's illness, his work to-night, his untidiness, his writing A sailor's leg touched mine, but changed position often, restlessly, almost angrily Mankind has lost nine-tenths of his tactile sensibility If I were a cat, I could probably tell what they are dreaming about My dog always sleeps with a bit of him touching me Children have a fair tactile sense When they are going to have a meal they think of it in terms of the taste and the feel of it in their mouths, when they're going to swim they feel the water round them hours before, they love nakedness, clothes can be a torture, hair-cutting purgatory What's that up on the rack? O, the Cheshire "Of course, my dear boy, I think entirely as smell, t and touch, at any rate for present use When I want do a little future thinking, I may throw a picture or but it's an effort Words, those obscene noises you how can you possibly think in those! Don't be a Snore—kick—rattle "That's why I enjoy the sun much, and being stroked and prolonged n propagation" He chuckled and faded Snort— "Gawd, what's that?" Dawn and Paddington

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A NATIONAL MEDICAL SERVICE SCHE

THE National Health Association, which has headquarters in Tunbridge Wells, advocates the fo tion of a National Medical Service based on democ principles and under the control of the local governm administration and insurance committees

They have drawn up the following scheme A nati medical service should extend over the widest possi area, including, in particular, rural districts It sh be administrated by joint health advisory boards, which would advise units in their respective areas on the implementation of improvements in institutional, industrial and domiciliary services The boards would cover the areas as defined by local government The service would thus work as a compact unit for t preservation of health and the prevention of ill heal as well as to secure early diagnosis and provide the m modern facilities for medical treatment under cent advisory direction

Under the Local Government Act 1929, authorities empowered to unite and form joint boards, having adviso and executive powers These authorities include coun councils, county boroughs, and municipal, urban and ru authorities Machinery thus already exists for the establish ment of joint health advisory boards These would act in con junction with already established medical authorities. Complete coordination of institutional, industrial and domiciliary medical services should be assured by these boards without interfering with the executive powers of local government bodies

An efficient national medical service should be divided into institutional, industrial and domiciliary services Institutional services, in the main impersonal, can be administered with efficiency by local authorities under the existing Public Health Acts Institutional medical services, consisting of hospitals, clinics (diagnostic and treatment), rehabilitation centres, specialist services (accident, blind and deaf, orthopædic, dental, infectious diseases, maternity and child welfare, mental deficiency, ophthalmic, nursing, pathology), poor law services, school medical services, tuberculosis, and venereal disease services, and such others as may be found necessary or desirable They would in the main be administered by appropriate public health authorities, which would be responsible through the joint health advisory board to the Minister of Health

Industrial medical services are administered in factories in peace time by the Factory Department of the Home Office, but in war-time by the Minister of Labour and National Service, in mines by the Minister of Mines, on railways by the Minister of Transport, and in merchant shipping by the President of the Board of Trade Such division of authority is inconsistent with an efficient national medical service Local authorities are the most appropriate bodies to administer the scheme

Domiciliary services comprise medical and pharmaceutical services in collaboration with facilities for specialist diagnosis and treatment in clinics under the institutional service Free choice of medical attendant and free acceptance by a medical practitioner are matters of fundamental importance for a democratic medical service A capitation scheme of payment coupled with a basic salary for the medical practitioner is essential Domiciliary service should be administered through insurance committees in the respective district of each author ity, and these committees would be responsible through the joint health advisory board to the Minister of Health

Ninety-five per cent of the population is in receipt of incomes of under £500 a year, it is proposed that they and their dependants should be covered by insurance for medical benefit, but without prejudice to their right to be privately attended by a doctor of their own choice The cost of institutional, industrial and domiciliary services could be covered by contributory insurances with Exchequer grants in aid

Public Health

Venereal Diseases in War-time

AN increase in venereal diseases is expected in war-time obvious reasons and in the present war some nificant increase did occur in the first stage—between unich and the declaration. Since then, judging from e annual reports for 1940 and the preliminary figures 1941, there has been no further rise What was ared most was that the establishment of aerodromes in ral districts would lead to extensive syphilisation of the pulation outside the great towns, for the records of e VD clinics gave evidence that syphilis was not mmon outside great cities and ports and since the last ar had declined greatly In the last war a great crease in venereal disease, especially syphilis, was pected, but it turned out to be far smaller than the ssimists predicted or the optimists feared The enereal-diseases service came into existence in 1914 nd by 1918 was going strong, but since in this country e have no compulsory notification of syphilis and ttendance at clinics is voluntary, the clinic records do ot give us full information of the incidence of venereal iseases We cannot say of syphilis, as we can of berculosis, whether the disease is rising or falling and so to what extent In 1939 there was a brisk rise in ases of primary syphilis reported from the clinics, but his does not seem to have been maintained Many linics report an increase in new cases in 1940 over past ears, but others a decrease ; nearly all report a lowered ttendance which in the disturbance of the population is ot surprising

An interesting table showing the trend of fatal syphilis ince 1915 is given by Dr W M Fraser in his annual eport of Liverpool for 1940 In quinquennial periods, he numbers of deaths attributed to syphilis were 259, 55, 169, 189, 267, but when these deaths are analysed it ecomes apparent that the figures are stultified by teadily improved differential diagnosis of cardiovascular lesions Deaths attributed to congenital yphilis in the five five-yearly periods were 179, 188, 83, 33, 26 The great drop between the second and third periods may be due to more accurate diagnosis, for the Wassermann reaction was not often employed before 1925 , but the drop in the past fifteen years is probably an accurate expression of what is happening Deaths attributed to syphilis at ages 1–40 were 47, 35, 17, 30, 26 In the 25 years deaths from locomotor ataxy sank from 80 to 56 and those from general paresis from 272 to 105 Figures for incidence are not available, so the drop in fatalities may be due to decreased incidence, decreased virulence, or improved treatment Probably all these factors are involved Virulence of syphilis has been declining for fifty years or more, long before the treatment of the disease by arsenicals was introduced This modern treatment has almost abolished the secondary and tertiary syphilides, but it was feared at one time that it might favour the remote parasyphilides The figures from Liverpool, especially the well-marked reduction in fatal general paresis, suggest that this fear is without foundation

Substitutes and Adulterants

The brief typewritten report of Mr G H Walker, city analyst of Salford, deals mainly with war-time substitutes for foodstuffs Some of these substitutes, such as for onion, are purchased by the public mainly for flavouring and are unobjectionable if they have the flavours ascribed to them, provided they contain no deleterious substances and do not purport to supply anything but flavour Most of them, however, advertise a vitamin content which, as was pointed out in these columns on May 16 (p 593), is found deficient on analysis The public may be defrauded either advertently by the substance never having had the vitamin content claimed, or inadvertently by its having lost it since it was manufactured If the substance is advertised to contain so many units of vitamins it is an offence if at the time of purchase it contains less But if it is stated clearly that the substance contained so many units at the time of manufacture and that these may be reduced by keeping there is no offence Such labelling is not good advertisement and is often omitted Mr Walker mentions one egg substitute which was labelled "egg mixture" and "dried new laid eggs" It was found to consist of two-thirds dried egg and a third soya-bean meal This is a good article and would pass were it not for the misleading subtitle An accurate descriptive labelling would surely have been good trade advertisement, for an egg mixture guaranteed to contain two-thirds of its weight of dried eggs is better value than the public expects Two samples of curry powder were found to contain 40 and 85 parts per million of lead, which comes from rubbing turmeric root with chromate of lead to improve its colour This is an old offence, but the increased use of curry powder to give flavour and variety to war-time diet has brought it into importance An occasional curry containing this small quantity of lead might not matter much, but in households where a curry once or more a week has become customary the danger of chronic lead poisoning cannot be overlooked The practice of "improving" turmeric with chromate of lead should be stopped immediately Mr Walker draws attention to samples of milk deficient in solids other than fat which are proved not to be watered by the Hortvet freezing test The position of this test as legal evidence is not quite clear For the defence, proof that the sample passed this test would cause a prosecution for tampering to be dismissed in any court , but would proof that the sample did not pass the test, unsupported by other evidence, be sufficient to ensure a conviction ?

Child Health

The reports of the school medical officers for 1941, though shorn of much of their prewar embellishment, retain their importance The circular of the Minister of Health which demands the suppression of population information where it would be most interesting, does not apply to the school reports, which are governed by the Board of Education Circular of December, 1941 ; this urged brevity, but required " A statement of the general effect of the war on the physical and mental welfare of the children, with special reference . " to nearly everything in the province of school medicine ! That is a tall order, for apart from actual destruction caused by air-raids, the effect of war conditions on child life will not be revealed save by long and detailed observation Briefly no school medical officer reports any extensive or well-marked influence on nutrition, physical state or mental condition of the children due to war conditions, but most notice a deterioration of cleanliness and a rise in scabies Dr Christopher Rolleston (Rutland county), whose reports are always amusing and enlightening, says that the nutrition of the children in his district is better than ever and this cannot be accounted to extra milk or school dinners He says "In the boarding-schools of the nineteenth century the extremely sparse diets provided did but little harm, as 15 weeks were spent in the comfortable homes of the Victorian era" This raises the question whether full nutrition can be maintained on a diet alternately above and below requirement Dr Rolleston also calls attention to cases of suppurating scalps which he says yield to the newer remedies In the last war, persistent suppurations were frequent in children, by some attributed, with little reason, to the war bread of the period Possibly insufficiency of vitamin A played some part in producing the suppurating scalps and whitlows which were certainly unusually prevalent in 1917–20

Dr Miller Young of Glasgow, Dr H M Cohen of Sheffield, Dr James Mitchell of Birmingham, and Dr St Clair Stockwell of Leeds report slight deteriorations in the health and nutrition of the children from the standards of 1939 , but Dr John Yule of Stockport and Dr J A Fairer of Leicestershire found no alteration The school dentists generally call attention to increased prevalence of foul mouths and gum diseases Mr Drummond Kinnear of Leeds mentions specially severe gingivitis and Vincent's angina (trench mouth) Dr Mitchell of Birmingham says "some of our children are less well cared for than formerly" , he mentions a definite rise in incidence of impetigo and "rashes ascribed to unsuitability of food" and more postural deformities indicating lower muscular tone and increased fatigue The children are noisier and less controlled than formerly but there has been no appreciable rise in nervous diseases Dr Young found no definite signs of deterioration in major respects in the condition of Glasgow children, but he mentions an increase in suppurating ears, scabies and minor affections of the gums, nose, throat and lungs The trend of children to become taller and heavier, which set in after the last war, was maintained in 1941 Dr Cohen of Sheffield *also notes an increase in minor ailments of the throat and* respiratory system which " do not recover as quickly as might be expected," and in dry skin diseases " attributable to shortage of fat and lack of fresh fruit and vegetables " There appears to be no increase in neuroses anywhere and special war neuroses have been sought but not found

The impressions conveyed by reading the school reports which have come to hand are insufficient fats in the war-time dietary of children, and, in the cities, insufficiency of vegetables to take the place of fruits now unobtainable , doubtful insufficiency of first-class protein, though insufficient vitamin A would account for most, if not all, of the adverse nutritional signs noticed by the school medical officers The children appear to have become more unruly, noisier and naughtier and somewhat less well cared for, but there is no evidence at present that the war with its bombing, shelter life and disturbances due to migrations has had any great effect on child mentality

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Letters to the Editor

CHARCOAL AND THE BP

SIR,—It gave me great pleasure to read your leader of June 27 exploring the physico-chemical basis of the pharmacological action of charcoal It has always seemed to me unfortunate that this drug should have fallen from medical grace and the BP at the moment when improved methods of activation had already raised it to a position of high esteem in industry The standard comment of its critics has been that charcoal, when wet, cannot adsorb gases efficiently For decades this scientific truth has been wrongly applied to conditions obtaining in the bowel and charcoal has been relegated to limbo despite the widely observed clinical fact that colonic flatulency is often substantially relieved when it is administered The two factors essential to success are the correction of the inherent constipating action of charcoal and the selection of an active variety Many activated forms are now available at small cost and for a few pence treatment could be continued for many days Therapeutic control over colonic gas is probably exerted before the gas is evolved Non-gaseous mother substances may be removed by adsorption or the gases themselves may be taken up in their nascent form before they have had time to coalesce and come out of solution as visible bubbles of gas

The reduction, during full charcoal therapy, in odour of the stool which is so noticeable is no doubt due not only to the removal of objectionable gases but to the adsorption of odoriferous liquids and solids such as scatole Charcoal may even prevent the formation of these bodies by adsorbing more complex precursors and removing them from their usual sphere of chemical interaction Adsorbents in general act also as catalysts, facilitating the interaction of substances simultaneously adsorbed on to their surfaces In this way more complete decomposition of bowel residues would be secured and the final products simplified

Charcoal is a powerful and useful substance of wide applicability in therapeutics and presently, I hope, with fitting stipulation as to potency and purity, it will be readmitted to the hierarchy of official drugs

London W 1 NATHAN MUTCH

MEDICAL WOMEN WITH THE FORCES

SIR,—In a previous letter, which appeared in your issue of April 18, regarding the status of women doctors serving with HM Forces, I stated that medical women volunteering for service under the Army Council were offered two alternatives—(*a*) relative rank with the RAMC without commission, or (*b*) a commission in the Women's Forces to serve with the RAMC—and that in the circumstances the Medical Women's Federation considered that " relative rank " only was preferable The federation has since been informed that medical women will not in future be permitted to choose relative rank without a commission, but must be given a mission in the Women's Forces—i e , they receive a commission in the Women's Forces to serve *with* the RAMC (A medical man receives a commission in the Land Forces to serve *in* the RAMC) We shall be glad *if publicity can be given to this decision in order to* avoid further misunderstandings

The position as regards medical women serving with the RAF medical branch has also now been clearl defined The women are obliged to accept commissions in the Women's Forces to serve with the RAF(MB) The appointments are gazetted as " to be medical officers with the relative rank of flying officer for employment with the RAF," and they are shown in the Air Force list as " Women medical officers commissioned for employment with the RAF "

CLARA STEWART,
President, Medical Women's Federation

TREATMENT OF RECENT WAR WOUNDS

SIR,—I hope it is superfluous for me to say that I agree with many of the views laid down by Professor Fruchaud in his paper of June 20, particularly with his four conclusions But I find some statements in his article which, I am sorry to say, are not in accordance with the facts

In the first place, Fruchaud writes of an exaggerated reaction against épluchage (wound excision) in the Spanish war In point of fact wound excision w recognised as the essential part of wound treatment in the army of Catalonia, and we made this principle our surgical gospel Secondly, Fruchaud makes a misleading statement when he says " The chief danger of imm bilisation in plaster, as practised by the Spaniards the treatment of war wounds, is that this compleme tary treatment may be substituted for the essenti operation " This suggests that we relied on the effe of the plaster more than on the operation, an implicati which is entirely wrong In my published work sin the beginning of the war in Spain, and even long befo it, I have always emphasised the vital part played b wound excision, and I am amazed to find how persistentl one has to stress the fact that the use of plaster for th treatment of accidental wounds is only permissible f surgeons who know how to perform a radical wou excision

From Fruchaud's article it is clear that his sole kno ledge *of the treatment of war wounds* in Catalonia w derived from the wounded soldiers whom he saw France at the end of the war Like the majority French surgeons, he was surprised to see that many the wounded had local infections, due, as he puts it, " insufficient operation " Is it not strange that o French colleagues should have been surprised at t number of local complications rather than at the va number of wounded who had survived the tragic en of an army which had retreated without a halt, from a area more than three hundred miles away ? Defea perhaps for the first time in history, was not accompani by an enormous increase in mortality Moreove casualties had been operated on in the most appalli conditions, often by the roadside and under continuo bombardment The surgeons who performed t operations tried only to enable the wounded to g beyond the range of the enemy, and thus in many ca the treatment was limited to a provisional enlargeme of the wound and the application of a plaster Th hoped that completion of the surgical treatment cou be carried out in France where the wounded wou arrive still in a condition sufficiently good for prop treatment It never occurred to my colleagues th many legs would be amputated on account of the b smell of the plasters It was a real tragedy that t teaching of the Lyons school—for which I have t greatest admiration—had no influence on the Fren surgeons who dealt with these cases during the first da after their arrival It is still more to be regretted th not a single French surgeon, with the exception Professor Ducuing, came to see our work during the w Had they done so they might have increased, if not th knowledge, at least their understanding of the fac The attitude of " It can't happen to us," for which are all now paying the price, if not confined to t French, was very prevalent among the surgeo

France right up to the time of that country's ollapse

One last word Without denying the important ontribution made by the modern Lyons school to the rogress of our profession it would not be just to attribute to that school alone the essential features of wound reatment which can be traced back far into the past, of them even to the school of Hippocrates

Oxford J TRUETA

SIR,—I read with great pleasure the article by Professor Fruchaud in the *Lancet* of June 20 He once more tates clearly and with the authority of experience the principles which should govern the treatment of war wounds To those in this country who direct the policy garding treatment of war wounds his words come as a sharp reminder that it is high time an authoritative statement were made as to the principles that should govern those who are called upon to deal with these njuries in the British Army The failure to organise teaching in wound treatment for Army surgeons, or even to state clearly the fundamental principles involved, means that men are being sent to the four corners of the earth to treat wounds without any clear knowledge of the correct procedure

Fruchaud warns us to beware of exaggerated enthusiasm for chemotherapy An even stronger warning should be issued against those who are laying emphasis on mechanical fixation of open and even closed fractures Incalculable harm will be done if recent discussions of this form of treatment and the emphasis laid upon it by those whose names suggest authority should lead to its adoption outside fracture centres or by the inexperienced

The technique described by Fruchaud differs in no essential detail from that advocated by Trueta The first " charge " he brings against the " Spanish method " is based on inaccurate information with regard to that method Trueta has always emphasised that adequate excision is the essential part of the treatment and the plaster complementary. The second is a detail of relatively minor importance The ideal method of producing the desired immobilisation of the tissues is the well-moulded, skin-tight plaster A dry gauze dressing loosely placed in the wound, in contact with highly absorbent plaster, provides the best method of drainage Both these statements are true only if adequate excision of the wound has been carried out and counter-drainage established when necessary Modification of the technique must be adopted to suit the local conditions

The last four sentences of Fruchaud's paper point a moral as important in the surgery of war wounds as is the dive bomber in the conduct of the war.

Radcliffe Infirmary, Oxford J C SCOTT

REACTIONS TO THE REPORT

SIR,—For many months a study group has met each fortnight in Tunbridge Wells, and this seems an opportune moment to bring to the notice of the profession certain considerations which appear to us fundamental, and should be borne continuously in mind when the interim report of the Medical Planning Commission is being discussed Too much thought has hitherto been given to details and not enough to principles

All persons regardless of class and wealth must have identical and complete medical facilities made available to them

The majority of the public is only too aware of the many shortcomings of the medical services available to it, and though the public is a bad judge of what is good for it, yet its parliamentary representatives are fully cognisant of these shortcomings and intend to remedy the position at the earliest opportunity

The almost unlimited gap between curative and preventive medicine must be bridged, for planning the future must concern itself largely with the preventive aspect of medicine, even though the education of the profession itself has been almost exclusively concerned with curative medicine

Research of all kinds needs adequate financial support and coördinated effort, not only nationally but internationally

The lack of coördination and coöperation in the existing medical services has resulted in an enormous waste of money, men and material, as well as giving rise to an ill-conceived and often ill concealed hostility between the GPs, the school medical officers, MOHs, &c

Improvement in the general health of the nation is impossible by medical means unless at the same time there is an improvement in environmental conditions , malnutrition and bad housing are the signposts of disease, disaster and death

The education of the public in health matters has been woefully neglected, with the result that the public has been far more concerned with the curative and palliative aspects of medicine—much to the benefit of the purveyors of quack medicines and remedies—than with the preventive , this aspect should therefore be continuously put before the public by all legitimate means of propaganda

The medical profession has failed to give an intelligent lead to the public and as Gregson wrote, " the profession must forsake its attitude of isolationism and take its place as a driving constructive force in remodelling the post war world " The profession now has its opportunity and must urge that better conditions for the masses is an essential part of its responsibilities, for the minimal standards of nutrition, working hours, working conditions and satisfactory housing are now known This is our moment , let us have vision beyond tomorrow and build worthily for the future

Tunbridge Wells W O MOORE EDE

SIR,—The " Majority ' Scheme of the BMA Medical Planning Commission will be unacceptable to a great number of medical men who can see in it a stepping-stone to a whole-time state medical service in which the freedom of the doctor and patient would disappear It is disturbing to know that, at this time when we are fighting a country in which state socialism dominates everything and everybody, and when that freedom both national and individual which we have enjoyed for so long is in dire peril, schemes are being put forward by our own countrymen to deprive the medical profession of its traditional professional freedom Many of us have no wish whatever to see the profession become a branch of the Civil Service, which is receiving so much criticism at this time on account of its bureaucratic tendencies and lack of initiative

Surely it is quite wrong to suppose that state control would improve the health of the community, and make the medical profession more efficient We need not burn down our house in order to obtain improvements An extension of the present system (roughly on the lines of the original BMA grey-book scheme) is all that is really necessary or desirable In London and large towns there is no difficulty in obtaining expert advice, special examinations or treatment Communal surgeries or health centres are not necessary Consultations between doctors can be easily arranged without these polyclinics It would be disastrous to try and regiment the profession and the medical services Uniformity is not desirable and the disappearance of voluntary hospitals would be highly regrettable Private practice must be allowed to continue if doctors are to retain their freedom It is a fallacy to suppose that society can ever be classless Equality can never exist in company with freedom Freedom of choice on the part of patient and doctors is essential The sale of practices is just as legitimate a transaction as it ever was

We have no reason to be defeatist or to follow alien models Improvements in medical services must be evolutionary and based on British traditions which have always placed high value on individual freedom and individual enterprise It is suggested that a doctor under a state service would be moved from one place to another, whether he wanted to or not Many of us have lived for years in the locality we have chosen ; we have got to know the people and take a great delight in our homes This would be the very negation of freedom and would constitute a grave injustice No compensation in the form of pensions could make up for loss of freedom

These, Sir, are only a few of the objections to a state service, whether partial or complete, and it is difficult to believe that the majority of medical men would really welcome such a scheme if they realised its implications

FOR EVER FREEDOM.

SIR,—As a practitioner of close on 30-years standing and the fourth in the line my great grandfather having subscribed to the first number of the *Lancet*, may I make a few comments on the Medical Planning Scheme ? Although professing not to be a whole-time state medical service, it is nevertheless a compromise and a forerunner of the whole-time service to come Those of us who value our individuality and freedom feel that the more acceptable scheme would be an extension of the present NHI system bringing in dependants and a consultant and specialist service A fair and adequate capitation fee should be paid and there should be a pensioning scheme and opportunities for postgraduate work I do not believe the majority of patients, panel or otherwise, wish to see their doctor at a polyclinic Collective medicine may suit some countries but it is unsuitable for this England of ours The people prefer to see their doctor in his own surgery and in large towns the doctor can *already send his patients to see a specialist at a* clinic in hospital, often by appointment

Why abolish buying and selling of practices ? Is this evil ? Have the gentlemen of the law done so, and do *they* propose to place themselves under the state ? Many of us have sunk considerable capital in our practices—capital obtained by hard work and savings Is this evil ? Nothing can compensate us for the loss of goodwill and for our individual freedom As for competition, surely this is a good thing A doctor under the present conditions of medical practice soon loses his patients if his work is not up to standard Leave the practitioner alone and do not turn him into a civil servant with the attendant evils of bureaucracy Free choice of doctor and an opportunity for private practice in the fullest sense of the word are essential

PS—It is surely unfair to revolutionise medical practice when so many practitioners are away on service and will have little or no say in the matter.

Gloucester Gate, W 1 RUSSELL STEELE

PSYCHOLOGY AND CHILDBIRTH

SIR,—With the recent experience of the birth of my first baby still very fresh in my memory, may I be allowed express my appreciation of such teachers as Dr nest Jones In anticipating my own pregnancy and nfinement, my postgraduate midwifery training in ospital and my experience in general practice left me eeling that I, as an average practitioner, had known next to nothing of the psychological features of childbirth I happened to find Dr Grantly Dick Read's "Natural Childbirth," and this was my source of inspiration during pregnancy The results of following this teaching have been highly satisfactory, from all angles Dr Scott's objections seem to me to indicate again that certain of us tend always to be less aware than the others of the underlying reasons for our attitudes The observations of the "majority of psychologists" cannot be so easily dismissed

Glasgow MARY MACK

WHAT IS A CONGENITAL SYPHILITIC ?

SIR,—Dr Nabarro in your last issue (p 778) makes the tacit assumption that syphilis can be transmitted to the third generation without a fresh infection Many other experts share this view, but personally I have never been able to satisfy myself that the evidence adduced is scientific, for the fact that a woman labelled a congenital can produce a syphilitic child is not positive evidence at all, if one stops to think of the two main assumptions implied

The first assumption is that every syphilitic baby is a congenital Now it is wise in any discussion to define one's terms, and I would define a congenital as a child infected with syphilis in utero Unfortunately however there are also large numbers of children born healthy but infected at or soon after birth by their syphilitic mothers These are not *congenital* but *natal* syphilitics Though Colles's law is true that a syphilitic child cannot infect its mother, the converse unfortunately is not true and a syphilitic mother can infect her healthy child at birth (or after birth) by handling, nursing or suckling All these natal syphilitics so infected are really acquired, and that they may produce congenital syphilitic children in the next generation is quite possible, especially if they marry early enough

The second assumption is the chastity of the mother People who produce congenitals are not generally of the highest moral calibre There is always some doubt about paternity, and the fact that a congenital child is born to a congenital mother and a supposed father who is Wassermann negative is no legal proof of transmission without reinfection Cherchez l'homme is as important cherchez la femme in a problem of this nature

Direct proof is obviously a matter of extreme diffi The ideal experiment would be to maroon two conge on a desert island, let them have a child, make that the child's blood-group was compatible with that the supposed father, and that there was no lur beachcomber hiding in the palm-trees in the back to complicate the issue If the child so produced out to be a congenital, I would be inclined to accept as positive proof of hereditary transmission to third generation But knowing the frailty of human *nature and the complete unreliability of the* history given in most cases of venereal infection I should hesitate to accept any less stringent proof

Wimpole Street, W 1 J JOHNSTON ABRAHAM

CONSIDERATE TONSILLECTOMY

SIR,—Welcoming as I do any kindness to a patient before and after operation which does not increase it risk, I would like to emphasise some of the points in your leading article of June 27 Even if a child is kept in hospital for one or two nights after its tonsils have been removed, there is still the risk of broncho-pneumonia from the journey home in inclement weather It is therefore best to shut down tonsil operations during the winter, say from the middle of November until the end of February If it be thought essential to remove tonsils during this close season, transport home should be provided from door to door Two further precautions will go far to prevent this and the dreaded post-tonsillectomy mastoid Do not take out tonsils from any child that has had measles, scarlet fever or whooping cough, wait until the next following spring Do not take out tonsils during a measles epidemic from a child that has not had measles That post-operative supervision should be adequate and skilled all will agree, but we may differ as to what it should be To have any attendant sitting by the patient is to my mind a mistake The child should pass from narcosis into natural sleep, if he opens his eyes to see an adult standing over him, he will open them again, take notice and sit up There should be no hope or expectation at the bottom of his little mind that mummy or daddy may be there This is done by talking *to* the [illegible] but *at* the child, when the operation is being a[illegible] Tell the mother that she will bring the chi[illegible] hospital in the afternoon, that the operati[illegible] done at a certain time next day, preferably th[illegible] but that she will not be allowed to see the [illegible] 5 P M and then only a peep Make it quit[illegible] her presence in the hospital is not needed ei[illegible] or after the operation Some mothers will ref[illegible] away, it is their children who will wake [illegible] and then will need an attendant by the bed[illegible]

My last point is that the time taken to de[illegible] against the operation should never be less than [illegible] of an hour A mother is entitled to that amou[illegible] surgeon's time at least before she commits [illegible] into his hands. Mr Gerrie and Dr Ross M[illegible] state "In a busy hospital time is of great impo[illegible] but all they deplore arises from the implication[illegible] statement, and the whole history of surgery s[illegible] introduction of general anæsthesia is a contradi[illegible] it The late Sir William Milligan thought it w[illegible] remove a child's tonsils in less than twenty [illegible] and no-one was a more rapid operator than he [illegible] siderate tonsillectomy" begins with the cons[illegible] and "humanity in dealing with the nation's c[illegible] must take precedence over the surgeon's time [illegible]

Guy's Hospital, S E 1 T B L[illegible]

PAIN IN PEPTIC ULCER

SIR,—Your leading article of June 13 interes[illegible] very much In all articles on this subject or [illegible] healing of peptic ulcers I have seen no referenc[illegible] effect of jejunostomy on the relief of pain and sul[illegible] of ulcer symptoms, yet in my experience this pro[illegible] gives relief in a few days In 1933 I described tw[illegible] in which I had used jejunostomy when encou[illegible] such severe ulceration with accompanying œdem[illegible] adhesions that a partial gastrectomy would hav[illegible] impossible in so severely ill patients (*Brit med J* [illegible] i, 221) Since then I have resorted to the same pro[illegible] in five other occasions, resulting in relief of pain, healing the ulcer, subsidence of all inflammatory reactions and solving of massive adhesions so that after two to three months a partial gastrectomy became simple In these cases the patients were fed entirely by the jejunostomy, taking nothing by mouth save only water if they found it essential though they seldom did No alkalis were given The pain of an acute exacerbation of an ulcer can be relieved by a Ryle's tube and repeated aspiration, while feeding is done by intravenous glucose saline This amounts to the same as the jejunostomy but cannot of course be maintained for so long

Surely these methods produce *true* rest for the stomach as against that alleged to be produced by repeated small feeds Hunger contractions are prevented because the patient is fed—in other words, an empty stomach will be at rest provided the body receives its nourishment through other channels From this it seems to me that the ulcer pain is due to muscular contractions plus inflammatory changes In jejunostomy the muscular contractions are relieved first, followed as a result by subsidence of the inflammatory changes This explanation would account for the immediate partial relief, followed in a few days by complete relief, and is in accord with the healing of ulcers in other parts of the body.

It would be interesting to know if experiments have been conducted on these lines and if others have used jejunostomy in this connexion

Portsmouth O STANLEY HILLMAN

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M P

LAST week opened explosively with demands for the presence of the Prime Minister in the House to answer questions and debate the situation arising from the defeat of the 8th Army in Libya The next day there was a debate on the colonies in which Mr H Macmillan described a three-pronged war policy; the increased production of things we need—that is notably vegetable ts and minerals—the restriction of imports to the onies and an increase of food production West ca is concentrating on rice, vegetables and dairy uce, and as milk has been an import from Great ain to West Africa the change is revolutionary In Africa the food increase is in wheat, maize, rye and nd forced labour is being used The extent of changes in food production can only be estimated ifficulty but they should produce at least some of permanent value to the level of nutrition in pics

H. B Morgan forcibly drew attention to the le poverty of the West Indies—children naked able to attend school, primary venereal disease young children treated at open clinics, and the rable condition of the West Indian colonial service "There is," said Dr Morgan, "only one Barbados Island with a population of 200,000 and she was only appointed in 1939" He asked heme to train West Indian nurses in London

* * *

important debate on family allowances was overed by these multifarious activities but may lead portant results Unfortunately the first form motion had been whittled down, by arrangement ough the Government, to a resolution commending the ion of a national scheme to the immediate conon of the Government As a white paper on allowances has already been published it is to umed that the Government have some cognisance scheme But anyway the etiolated resolution ved by Wing-Commander J A C Wright and ded by Miss E Rathbone who is so largely responsible ging the scheme forward as a practical and eable plan Miss Rathbone in 1925 wrote "The erited Family," which focused the attention of ists and those concerned with the importance of amily in society on the allowance problem In 20's New Zealand and New South Wales adopted The federal government of Australia and the ment of nearly every country in Europe instituted allowances for their civil service Miss Rathbone said that to bring about any social reform in this country one needed the patience and perseverance of Bruce's spider, the importunate widow, the Ancient Mariner and the giant Sisyphus rolled into one She laid stress on the statistics of Mr Seebohm Rowntree's book on Poverty and Sir John Orr's computation that a quarter of all children belong to families where the total income works out at 10s per head per week "And yet when a maximum price of 5s is put on a restaurant meal, we call it austerity" The speech had passion behind it and she begged the Government to give hope of an early scheme And the Chancellor of the Exchequer did give some hope of a scheme being considered in the autumn in the light of Sir William Beveridge's report, the Trades Union Congress in September and of our financial position But the reply was on the whole disheartening and the prospect of effective action in the near future not very great But members are uneasy that they have to turn their minds away from these fundamental problems to immediate dangers And in that uneasiness is a tribute to Miss Rathbone's work and the sure belief that her work will in the end be realised

FROM THE PRESS GALLERY

Family Allowances

THE supporters of family allowances are no longer a minority forcing an unwelcome proposal on the Government but rather a majority giving expression to an enlightened social conscience In moving the institution of a national scheme in the Commons on June 23 Wing-Commander J A C WRIGHT pointed out that parenthood is both a privilege to the individual and a service to the community and that the benefits of family allowances will accrue to the nation rather than to the individual The greatest single factor in poverty is the size of the family and we can best honour the family by helping it, but the scheme could not be successfully run by what he called the "soup-kitchen" mind, for it should not be regarded merely as an antidote to destitution Once settle the principle of family allowances and the task of the Beveridge Committee on the reorganisation of social insurances would be enormously simplified Miss E RATHBONE dared to be impatient for the sake of the children and asked how many generations were to grow up with stunted bodies and minds while political parties were letting "I dare not" wait upon "I would" She pointed out that even the target of school dinners for a million children would only cover a fifth of the elementary-school population Family allowances would relieve the children from want and their parents from fear Mr M R HELY-HUTCHINSON asked to be allowed the luxury of a little debunking Destitution was accentuated by large families; it was not always or necessarily caused by large families He contended that while there might be a case for allowances for those below the average or desirable income level there was no case for a general scheme Dr EDITH SUMMERSKILL has found the well-fed child is the alert, receptive child, and she predicted that if the standard of living of our child population was improved there would be a rapid decline in juvenile delinquency She had been impressed by the BMA scheme for a medical service for everyone after the war but let Parliament see that each child received a bottle of milk before it received a bottle of medicine Mr F MONTAGUE sharply criticised the scheme from the point of view of a Socialist He believed in direct social service —such as free education—but not in subsidies If they wanted to solve the problem of nutrition, they must take the elements of nutrition right out of the money economy The people required so much as a standard of nutrition The amount was known Let Parliament guarantee that minimum to the whole of the nation as a foundation of its physical existence Captain C YORK speaking as one of the younger generation, advocated a five-bob a nob scheme for every child, rich and poor alike, and the elimination of the present income-tax allowances

Sir KINGSLEY WOOD admitted that the case for family allowances was powerful, for it would lessen the risk of malnutrition in large families Support in all sections of the nation had steadily grown, and while it was true that family allowances were not strictly within the terms of the Beveridge Committee, any scheme must obviously be considered in conjunction with the report from that

OUTBREAK OF SMALLPOX

ON May 29 a ship arrived at Glasgow with a case of illness that was there diagnosed as variola major The infection was probably acquired at Cape Town There were on board about 1200 persons, civilians and service personnel, all of whom were vaccinated or revaccinated on May 29 They proceeded to their destinations and medical officers of health of the districts concerned were informed Of 12 contacts, regarding whom particulars are available, all except 2 were successfully vaccinated while they were incubating the disease and the attacks were modified In one case the vaccination was unsuccessful and the child, who had never previously been vaccinated, developed smallpox in Swindon where it had been taken Two cases in Swindon residents have since been notified In Glasgow there has been a spread of the infection, and 14 residents have been removed to hospital, the latest admission being on June 29

According to the most recent information 12 members of the ship's company were removed to a smallpox hospital in Glasgow and 2 of these have died, 14 persons resident in various parts of the city have been removed to hospital as definite cases of smallpox, and 3 cases have been notified in Swindon The total of known cases is therefore 29

University of Cambridge

At recent examinations for the degrees of M B, B Chir, the following were successful —

Part II—Surgery, Midwifery and Gynæcology J N Agate, R J Alcock, W B Alexander, A G S Bailey, A D Barlow, H W A Baron, D J Bauer A O Bech, C P Bennett N L Birkett, F W Blacklay, R J K Brown P H Buxton, T O Candler, A W Capon, E F Carr F S Carter, J M Childs, J A H Collyns D J Conway, W N Coombes, P N Cunliffe A J Danby, I N Darbyshire, J Dean, P J R Deller, W K Douglas, M P Durham P F Early, A G Eddison (W F Felton, J H L Ferguson, J L Fluker, T R Gilchrist, J V T Gostling, A G Harrold P L M Hartley, D Hilson, T S Hindle, R F Hollick, S C H Hood P H S Hooper, E N M Johnston, H R Jolly L G Kingdom W S S Ladell, F M Lancaster, F K Lau T L T Lewis, D I Lishman, G C Lloyd Roberts J Lomas, F H Lomax, T G E Loosemore, D McAnally I M MacArthur, F L McDonald N M Mann, H E S Marshall, P H N Matthews, R M S Matthews, H R A Michelmore, P A G Monro, W K S Moore, J M Morgan, Y H Ng, W J L Pain, J S Pegum, J A Peters, R V Peters, H L Pierce, R J F H Pinsent, B Pownall, E Pringle, S H Purser J F P Quinton, R K Reid, W Rogers, L A Rook, H M J Rowan, I A Roxburgh, P H Sanderson D L Sandes O L S Scott T O Scudamore, J H Simpson, I M Smith O Sookias, J W Squire, J H Steeds J P Stephens H C Still J R Thompson, R N Ticehurst, W H Trethowan G S Udall, C R M Warner, D J Watt, L A S White, E N Whitley, D E C Whittome, A B Willcock, and H I Winner

Diphtheria Returns

The Minister of Health has asked medical officers of health to let him have, as soon as possible after June 30 and not later than July 21, their returns of the number of children in their district immunised against diphtheria during the last six months They are also asked to give figures for fatal cases of diphtheria in children as well as notified cases, but detailed particulars about each notification are no longer required

Oxford Nutrition Survey

The Rockefeller Foundation has made a grant of £1875 towards the expenses of this survey during the past year and has promised a grant of £3000 for each of the next two years These funds will be administered by a committee consisting of the Regius professor of medicine, the Whitley professor of biochemistry, the Waynflete professor of physiology, Sir Robert McCarrison, Sir Wilson Jameson, and Dr H M Sinclair The survey is investigating economic, dietary, clinical and biological methods of assessing nutrition in man Besides giving training in their use it is also on behalf of the Ministry of Health examining the nutrition of samples of the population

Socialist Medical Association

At their annual general meeting on May 10, the association passed a number of resolutions dealing with problems of our war time world While they concur in the need for mass X ray examination of susceptible groups, they regard the provision of more adequate NHI benefit for tuberculous patients as an essential part of the development of any scheme of this kind They welcome the inclusion of tuberculous ex patients in the Ministry of Labour rehabilitation scheme, but urge the establishment of the principle of subsidised wages for part time or substandard work They are concerned at the deterioration of conditions in mental hospitals as exemplified by the increase in the incidence of pulmonary tuberculosis, and ask the Ministry of Health and the Board of Control to release beds requisitioned by the EMS or provide alternative accommodation, to examine by mass radiography at regular intervals patients and staff, and to arrange for advice by local tuberculosis officers in early selection of cases The association also suggest that all restrictions on the use of EMS hospitals imposed by local government boundaries should be overruled and that these hospitals should be free to accept patients from any area, but particularly from that in which they are situated The association call for the reservatio of doctors now in industry and for the direction of furthe doctors into industry, but suggest that for the treatment o minor ailments more use must be made of the industrial nurse and of the welfare worker They also recommend the setting up of committees in hospitals and public health departments similar to the production committees of industry on which both employers and employees are represented

Royal College of Physicians of Ireland

The following have been admitted to the fellowship of the college J A D Deeny, MD, Lurgan, co Armagh, Andrew Whelton, MD, Cork, and John Duffy, MD, Dublin

London County Council

The council, at its meeting on June 30, passed a resolution regretting the exclusion by the Minister of Health of mental nurses from consideration by the Rushcliffe Committee for the national determination of nurses' salaries

Dr D Stark Murray has been appointed a member of the hospitals and medical services committee

Medical Casualties

In a recent casualty list it was announced that WS/Captain S A H Qureshi, MRCS, RAMC, has died T/Major E E Evans, LMSSA, RAMC, has been posted as wounded, and Captain Conrad Rigby, MB Lpool, RAMC, has been officially reported as missing since the fall of Singapore

Research in Transfusion Products

The trustees of the late Sir Henry Wellcome have placed a sum of up to £20,000 at the disposal of the Medical Research Council for research into methods of drying blood plasma and blood serum to provide stable products for use in transfusion The gift is to be applied to the purchase, erection and operation by the council of a plant which will make it possible to test and develop these methods on a substantial scale, and the products will be freely available for the treatment of sick and wounded at home, at sea and abroad

Appointments

BOTTOMLEY, JANET FRCS senior house surgeon at the Chel Hospital for Women

MACGILCHRIST, D C, MB EDIN examining factory surgeon f Duns and Chirnside, Berwickshire

MARSHALL STANLEY MD LOND temporary pathologist at th Hospital for Consumption, Brompton

QUINNELL, G A F, MB GLASG examining factory surgeon f Milborne Port Dorset

Births, Marriages and Deaths

BIRTHS

BRIGSTOCKE —On June 25 at Norwich, the wife of Captain Mervyn Brigstocke RAMC—a son

HEESOM —On June 25, at Reigate, the wife of Dr Alan Heesom—a daughter

JEFFERISS —On June 22, in London, the wife of Major Den Jefferiss, RAMC—a daughter

LANCASTER —On June 24, at St Annes on the Sea, the wife o Capt Geoffrey Lancaster RAMC—a daughter

McSHEEHY —On June 21 at Woking, the wife of T/Major H O F McSheehy, RAMC—a daughter

STUART HARRIS —On June 22, at Andover the wife of Ma C H Stuart Harris RAMC—a son

SWANSTON —On June 18, at Thirsk, the wife of Dr Kelly Swans —twin daughters

MARRIAGES

ALMOND—WARD —On June 20 in London, Richard Geo Patrick Almond, Surgeon Lieutenant RNVR, to Ursula War WRNS

BAKER—COLLINS —On June 26 at Heathfield, Sussex, Co Baker MRCS, to Betty Collins

DAVIES—BROOKS —On June 13, at Lowestoft, T Tibbott Dav Surgeon Lieutenant, RNVR, to Jean Brooks

HARRIS—BARCLAY —On June 20 at West Malvern, St Geo Eyre Harris, OBE, RAMC, to Mary Kathleen Barclay, CBE, R late QAIMNS

LEE WOOLF—McKENDRICK —On June 20, at Oxford Ja Philip Lee Woolf, BD, to Jean Dorothy McKendrick MB

WILSON—PALLISTER —On June 24 at Lambeth, Richard Wil Lieutenant, RAMC, to Barbara Pallister

WOOD—BERWICK —On June 20, at Compton, Louis Art Charrington Wood Captain, RAMC, of Penshurst, to Mar Berwick, of Bournemouth

DEATHS

HALL —On May 12 at Esher, Frederick William George Gor Hall, CB, MB EDIN, colonel, AMS retd, aged 80

ÆTIOLOGY: A PLEA FOR WIDER CONCEPTS AND NEW STUDY*

JOHN A RYLE M D LOND, F R C P
REGIUS PROFESSOR OF PHYSIC UNIVERSITY OF CAMBRIDGE, CONSULTING PHYSICIAN, GUY'S HOSPITAL, CONSULTANT ADVISER EMS

BY ætiology we should understand the science, not of cause, but of causes The Oxford English Dictionary defines it as "the science or philosophy of causation," and Dorland's Medical Dictionary as "the sum of knowledge regarding causes" It is well to insist on such definitions, for the discovery by Pasteur and the great pioneers in bacteriology of specific microbic agents of disease, and the recognition by others of specific chemical agents and specific deficiencies have, until quite recently, and contemporaneously with their immense benefits to medicine, had a peculiarly limiting effect upon the vision and the practice of many medical men, not excluding teachers They have in fact compelled a neglect of the associated causal factors without which no disease can have its being They have also fostered a belief in or search for single determining causes where none exist For the most part specific factors appear to have a greater importance in acute than in chronic diseases, but even here they would be inoperative but for the conspiracy of other factors, the discovery of which is essential to the full understanding of individual liability and pathology For example, the pneumococcus may be essential to the development of lobar pneumonia, but seasonal and climatic conditions, poverty and other environmental accidents, and inborn susceptibility—to mention only a few associated causes—can also play their part Susceptibility again is often related to age sex, physical type and habits Factors of this kind have suffered neglect through preoccupation with ideas relating to the microscopic organism which we accept and name as the *causa causans* of the disease Some of them especially, as the *causæ causarum* of disease await our more intimate study.

* * *

When we come to consider such chronic diseases as duodenal ulcer or pernicious anæmia, diseases for which no research up to date has revealed a constant mode of causation, the concept of "multiple factors" is of even greater importance and can influence not only academic interest and understanding, but also our bedside assessment and management of cases At the end of the last war we were still under the domination of the bacterial hypothesis and seeking to attribute peptic ulceration (and indeed many other unrelated diseases) to infection having its origins in some remote focus such as a tooth socket At the beginning of the present war a deepening and healthy interest in ætiology has led us on (or back, for the older physicians were very alive to these causal complexities) to the "multiple factor" hypothesis and the concept of focal sepsis as a main contributor has been largely discarded In the case of duodenal ulcer we are accumulating evidence, through careful inquiry into natural history, for the part played in pathogenesis by such factors as age, sex, hereditary predisposition, physical type and temperament on the one hand, and emotional and occupational stress and tobacco on the other Under the influence of one or more of the last three factors (which somewhat similarly affect the neuromuscular behaviour of the stomach) it may be suggested that there are persons endowed by one or more of the preceding five factors with a heightened susceptibility (in association locally with an innate tendency to motor, secretory and vascular overactions) to the development of the characteristic lesion Diathesis and environment, through sustained physiological disturbance, both have significant influence and may even provide the "whole cause" The story is not complete, but we begin to see the plot

At the end of the last war we were wholly in the dark as to the cause of pernicious anæmia Dental sepsis was again principally blamed and its importance re-emphasised by Hunter (1890, 1922), while Hurst (1923–1924), Faber (1924) and others insisted, with better but incomplete justification as time has shown, on the contributory influence of the accompanying gastric achylia The brilliant discovery of Minot and Murphy (1926) and the researches of Castle (1929) not only revolutionised treatment and relieved a mortal disease of its baneful name and prospects, but have led us far along the path of a true pathogenesis which is again shown to be based on varying "multiple factors" Age-incidence was recognised and an associated physical type commented upon by Addison (1849–1855) who, although Combe had reported a case in 1822, was the first to give full and separate portraiture to the disease The probable gastric pathology and the community of Addison's anæmia and subacute combined degeneration of the cord have been stressed by Hurst. Familial liability has been demonstrated The correction of the symptoms by an extrinsic food factor and the appreciation of their dependence upon the lack of an intrinsic factor, which we owe to Minot and to Castle together with other studies, have now taught us that deficiency in hydrochloric acid is not a cause, but that a certain type and distribution of gastric mucosal injury promoting another secretory deficiency is the usual precursor of the spontaneously developed blood-disease Clinical inquiry activated by these discoveries has also shown that carcinoma of the stomach or sometimes the operation of gastrectomy, and tropical sprue and other diseases of or operations on the small bowel may also be followed by Addisonian anæmia Healthy persons, free from any of these antecedent gastro-intestinal pathologies, do not develop anæmia on diets deficient in sources of the specific extrinsic factor Addison's anæmia thus becomes an example of what is now termed a "conditioned deficiency" disease. It may depend either upon lack of intrinsic factor when the stomach is at fault or upon an absorptive defect when the small bowel is diseased or resected In the first instance peroral administration of extrinsic factor is effective, in the second it must be given parenterally Not a single determining cause, such as we were seeking twenty years ago, but a varying conspiracy of causes is the truer ætiological picture A specific deficiency may, it is true, be claimed as the ultimate and essential factor, but it is due to and only effective in conjunction with a variety of other factors and some of these must be held to have at least an equal importance with the deficiency itself in promoting the arrival of the disease

Directly influenced by this new knowledge we are now becoming familiar with the occurrence of other conditioned deficiencies and avitaminoses arising generally as a consequence of some preceding gastro-intestinal pathology Examples are the peripheral neuritis of alcoholism, pellagra complicating cancer of the stomach and the multiple mineral deficiencies and avitaminoses accompanying tropical or non-tropical steatorrhœa Thus it comes about that deficiency diseases, due usually to grave dietary restrictions attendant on geographical chance or war and famine, can also occur from time to time in any place or clime and even when full diets are available

* * *

And then there is the case of cancer Whatever new knowledge may emerge from the various intensive studies so long and so patiently pursued in so many laboratories it appears probable (alike to its clinical observers and its experimental students) that this disease too must come to be classified among those dependent upon variable "multiple factors" Herein reside some of its chief difficulties In all the more chronic types of disease—whether infective or neoplastic—it would seem that the several factors concerned possess a much more equivalent influence (as is suggested by the story of Addisonian anæmia) than is usually the case with the acute diseases Typhoid fever, it is true requires a chain of accidents to bring it into being in the individual, but with a given dose of organisms it could probably be produced in anyone who has not been inoculated or previously infected with the same organism For many reasons the liability to pulmonary tuberculosis is much more variable, the parts played by such attendant circumstances as age, nutrition, occupation and family predisposition clearly have a more equal value in comparison with the bacterial invasion than have like factors in comparison with an invasion of typhoid bacilli Nor need we ascribe the different liabilities entirely to differences in the number, type and mode of action and spread of the invading micro-organism. Thus in tuberculosis, youth and bad nutrition might be said to have equivalence with a certain dose of tubercle bacilli as determining factors in the precipitation of the disease Neither a more mature and resistant age nor good nutrition, however, might protect against a particular dose of typhoid bacilli shown capable of producing the disease in a starved child

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* Part of the Dr Isaac Gilchrist Lecture on "The Progress and Present Aspects of Medical Science' given at Aberdeen University on June 10 1942

Passing again from these acute and chronic bacterial diseases to cancer we know that age in most cases, and sex and chronic irritation affecting certain organs or tissues in some are ætiological factors which cannot be disregarded It may even be suggested as likely that age and chronic irritation (through waning tissue activity) and sex (through changing hormonal balance) will be found to have an equivalence as determining factors with such specific agents as are brought to light by the experimental method and animal studies

* * *

Pursuing our argument a little further, it becomes apparent that a specific factor is one which determines the species, kind or nature of a disease As such it is a sine-qua-non It is no more the determinant of the arrival or the amount of a pathological change than are some of the other factors concerned This definition, however, does not imply that specific factors lack quantitative variations and effects The relatively stronger effect in the chronic than in the acute diseases of such non-specific factors as age, sex, habits and occupation is clearly in part a " temporal " one and due to sustained influences To such influences the quick tempo of the acute diseases allows little or no play. There is therefore, as has been indicated, fuller justification in the chronic than in the acute diseases for invoking the " multiple factor " hypothesis

The ætiology of the psychosomatic disorders and of the visceral neuroses in particular is now being more fruitfully studied, but here too much error remains to be contested From the end of the last war and before to the beginning of this there has persisted a vagueness of thought and laxity of judgment in connexion with the disorders of the hollow viscera The heart, in spite of the influence of Mackenzie, Wenckebach, Lewis and others, has continued to be labelled with the name or suspicion of disease in countless cases in which its behaviour was only expressing emotional or environmental stress The abdominal organs have been repeatedly subjected to exploration or operation for symptoms due to similar causes The crude idea that pain of necessity implies a lesion, the over-mechanistic influence of surgery—so potent in certain anatomical adjustments or the eradication of grossly diseased parts—and the increasing safety of surgery and anæsthesia are largely responsible Neglect of the important work of Cannon and Pavlov, neglect of careful history taking and temperamental assessments, and the temptation, in the face of a difficult symptom-analysis, to hand over the investigation of cases to the radiologist or the chemist have also played their part Constitutional and nervous causes, social circumstance and habits of life have in the meantime been undervalued and too superficially investigated

* * *

Ætiological study, although it may require and be grateful for the assistance of physiology, genetics, and experimental pathology, is essentially a clinical or " field " study in the first instance It is based on observation and historical analyses It is a part of medical science It has suffered neglect, curiously enough, in the past quarter of a century through the influence of new discovery which should have helped it It has been coming back into its own in the past few years It has important contributions to make to preventive as well as curative medicine If clinical teachers and students and practitioners will continue to welcome and extend its discipline, they will inevitably find that the interest of their subject is enhanced and that judgment in practice benefits

Of all the functions of ætiological science, in its broader practical applications, the most important are the recognition and more intimate study of those factors in their work, nutrition and housing, which at present take such a heavy toll of the life, health and efficiency of the working classes in all countries Indeed much that is truly ætiology extends beyond the relatively co province of pathology and invades the broader territory of social science.

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INFECTION BY NON-HÆMOLYTIC GROUP-A STREPTOCOCCI

LEONARD COLEBROOK
M B LOND.
LATE COLONEL, R A M C

S. D ELLIOTT,
M D. LOND , D P H

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Francis (1942) recently reported the spread of a type 12 strain of hæmolytic streptococcus in a plastic-surgery ward during the first nine months of 1941. The strain was insensitive to the sulphonamide group of drugs Its appearance in the wounds was frequently associated with acute sepsis Towards the end of the same period there occurred a series of cases of sepsis, similar in their clinical manifestations (fever, suppuration, sometimes an " erysipeloid " flush, &c), but differing sharply in their bacteriological findings No hæmolytic streptococci were grown from these cases, either aerobically or anaerobically, and the predominant organism in each case, in films and cultures, was a non-hæmolytic streptococcus Thirteen patients up to date have yielded streptococci of this type from a focus of infection , some had little or no fever

In one case acute sepsis followed a plastic operation involving a healed scar Non-hæmolytic streptococci had been isolated from the wound several months before but had not been investigated

In another case sepsis followed a plastic operation involving an unhealed wound from which similar streptococci had been isolated on three occasions within a few weeks of the operation—but again these cocci had not been investigated

In a third case a large raw area resulting from excision of the breast had yielded hæmolytic streptococci (type B3264), but these had disappeared under local treatment with sulphanilamide prior to operation for covering the wound After the operation only non-hæmolytic streptococci could be recovered and the patient became extremely ill

In a fourth case a patient suffering from burns died from endocarditis Non hæmolytic streptococci, reacting as group A, type 12, were isolated from the spleen post mortem and also from some of the burnt areas and the urine during life

In two other cases the acute sepsis did not follow operative interference Non hæmolytic streptococci had been recovered before the flare up

In five other cases the sepsis was slight, with little or no fever, but the clinical course was more or less unsatisfactory

One of the two remaining cases is noteworthy in that the organisms were recovered from a septic wound of the buttock on admission from another hospital

BACTERIOLOGY

The thirteen strains isolated from these cases had few distinguishing features With two exceptions the colonies on blood agar were matt and of similar size, conformation, and consistency to those of ordinary group A hæmolytic streptococci—although growth at 37° C was somewhat slower The two exceptions—strains subsequently identified serologically as types 11 and 25 respectively—gave glossy colonies None of the thirteen strains showed the " curled leaf " appearance which is so characteristic of hæmolytic streptococci on certain media, but this feature was very inconstant with the blood agar we have been using

There was neither α nor β hæmolysis on the primary cultures made with horse blood agar (meat infusion medium supplied by Major McCartney) aerobically, nor with subcultures on the same medium anaerobically Human and rabbit blood plates made with this medium also gave no hæmolysis and no green zone. When tested on a different nutrient agar (meat infusion plus peptone) with horse blood, all the eleven strains which subsequently proved to be type 12 gave a zone of green coloration, while the two strains belonging to types 11 and 25 give no such zone The strains appeared to be quite different from the so-called "green" strains to which Fry (1933) called attention, since the latter gave typical β hæmolysis in the absence of oxygen and also produced soluble hæmolysin normally in serum broth With our strains no S hæmolysin (Todd 1934) was produced in serum broth, but nine strains (9 of type 12 and 1 of type 25) generated O, or oxygen-labile, hæmolysin.

The fibrinolysin produced in serum broth cultures was feeble—digestion of the clots taking place only after 1 to 3 hours

Fermentation reactions —All the thirteen strains fermented lactose, salicin and trehalose They failed to ferment mannite, sorbite and inulin.

Hydrolysis of sodium hippurate —All strains were negative

Virulence for mice —All strains were of low virulence

While these routine tests were being completed, we recollected that Dr F Griffith had observed the growth of a non-hæmolytic variant from one of his classical type strains * There were also indications in the literature that serological identity did not always go hand in hand with hæmolytic activity on blood plates Thus Todd (1928) had noted the development of non-hæmolytic variants of the Henson strain (type unknown) by passage through mice His variants, however, gave typical hæmolysis in the absence of oxygen Fry's observations (1933) of "green" colony variants have already been mentioned Lancefield (1934), too, described the occurrence of a non-hæmolytic variant of a group B strain after passage through mice, which had the same serological character and virulence as the parent, hæmolytic strain Stableforth (1932) had earlier reported that, among group B strains giving similar serological reactions, the hæmolytic activity was very variable and often absent Recently Coburn and Pauli (1941) have reported experiences with non-hæmolytic variants of a type 12 strain in connexion with an epidemic among infants This will be referred to later In a recent review Lancefield (1941) discussed the relationship between serological identity and hæmolysing activity and concluded that, with regard to group A, "few, if any, frankly non-hæmolytic strains are known"

On testing our thirteen strains by the Lancefield method against stock grouping sera, all gave a typical ring with the A serum and none with B, C or G sera A number of other non-hæmolytic strains isolated from various sources other than the series of cases referred to gave a negative result with all the sera—so that there has seemed to be no reason to doubt the specificity of the group A serum employed. It has been in constant use for many months The results have been checked in two laboratories

Subsequently eleven of the thirteen strains giving a group A reaction were identified as type 12 by the slide agglutination test They also absorbed agglutinin from a type 12 serum The remaining strains were identified by agglutination and absorption tests as type 11 and type 25 respectively

It seems probable, therefore, that eleven of the infections we had been dealing with were in reality due to the type 12 strain Francis had reported, or at least to a variant of that strain which has, for some unknown reason, lost its capacity to produce S hæmolysin. Like the (probable) parent type 12 strains, all our non-hæmolytic strains of this type are insensitive to the sulphonamides

DISCUSSION

The relation of these unexpected findings to those of Coburn and Pauli is not quite clear Their evidence suggested that the respiratory tract infections by their type 12 strain had sometimes originated from certain infants whose throat swabs had not yielded these organisms, but only non-hæmolytic cocci These latter, in two instances at any rate, threw hæmolytic variants on prolonged cultivation in serum broth, and were identified by the precipitin test as type 12 Conversely, typical hæmolytic strains (type 12) isolated from the throats of other infants yielded non-hæmolytic variants on subcultivation, particularly when grown in the serum of infants The majority of our non-hæmolytic strains (ten out of twelve) have not reverted to the hæmolytic variety after many subcultures The two exceptions ("Carter" and "Wilson") threw some hæmolytic colonies after only two subcultures on blood agar, and these bred true The serological reactions of the non-hæmolytic and the hæmolytic variants of "Carter" and "Wilson" were identical

In some respects the observations of Coburn and Pauli differ from our own We have not observed more rapid growth at 22° C than at 37° C. Moreover, our non-hæmolytic variants have agglutinated normally with specific serum, and extracts have given a good precipitin reaction with the group serum ; theirs did not agglutinate with any serum, and gave only a feeble group reaction (precipitin)

A number of important questions arise from these two investigations .—

(1) Are the non-hæmolytic strains really variants of *Streptococcus pyogenes*—or have the serological tests misled us ? The latter seems unlikely, but must be kept in mind

(2) Have we (and other bacteriologists) been frequently missing group A streptococci in our routine cultures because of this loss of the capacity to produce hæmolysis on blood agar ? We do not know but it is possible If it should prove to be the case most of our epidemiological studies will need revision The well-known difficulty of detecting the source of many puerperal and surgical infections might find an explanation in such variations of hæmolysin production

(3) Does this reversion to non hæmolytic variants occur with many of the serological types of group A ? Up to the present it is known to have occurred only with types 11, 12 and 25

(4) What test can we devise for the rapid detection of these non hæmolytic variants of *Strep pyogenes* in routine bacteriology ?

(5) Has exposure of the (presumed) parent type 12, type 11 and type 25 strains to suphanilamide played any part in their reversion to a non-hæmolytic type ? There is at present nothing to suggest such an effect

SUMMARY

Non-hæmolytic streptococci were predominant in swabs from thirteen cases of local infection—seven of them patients with fever or suppuration—clinically resembling that due to the ordinary group A hæmolytic streptococci

All the thirteen strains reacted with group A serum (precipitin test), eleven of them were agglutinated by type 12 serum and also absorbed agglutinin from it The other strains gave a type specific reaction with type 11 and type 25 sera.

The infections with the eleven type 12 strains followed a period in which hæmolytic strains of type 12 had been spreading in the wards Both the hæmolytic and the non-hæmolytic strains were insensitive to sulphanilamide

The mode of spread of these non-hæmolytic strains remains obscure. They were derived from patients in five different wards, one of which was half a mile away from the rest

Our acknowledgments are due to Sir Harold Gillies, Mr J C Cuthbert and their colleagues, in whose wards the cases occurred.

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LING ASSOCIATION —The report is now published of the inter-allied open conference (see *Lancet*, March 28, p 396) on the wide aspects of physical education Copies (2s post free) may be obtained from Miss P. Spafford, Ling Physical Education Association, Hamilton House, Bidborough Street, London, W C 1

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* A non hæmolytic variant of type 1 has since been found among the strains which were in Dr Griffith's possession

She was readmitted three months later for duodenal obstruction with vomiting Glucose saline was given intravenously and by rectum, but the amount vomited continued to exceed the intake She was very dehydrated, and the blood at operation was noticeably concentrated Blood pressure was now 130/90 mm Hg After omnopon, gr ⅓, and scopolamine, gr 1/150, a tracheal catheter with inflatable cuff was passed under anæsthesia from 0 5 g of pentothal, and nitrous oxide and oxygen given A subcostal field block was made with 85 c cm of 1/1000 percaine and a gastroenterostomy performed without incident An inoperable cancer was found around the duodenum, with peritoneal secondary deposits Immediate convalescence was satisfactory, but she died two months later

It seems that the severe jaundice, and possibly the fever, must have been largely responsible for the convulsions during the first operation Personal idiosyncrasy can be excluded by the subsequent history It is possible that local anæsthesia should not be used in such a case, or at any rate that the amount given should be strictly limited

CASE 3

A girl of 25 presented no symptoms She was healthy and active, playing many outdoor games, and was an ambulance driver On medical examination for the WAAF, two enormous abdominal tumours were found—she said her abdomen had always been large One was arising from the pelvis and was obviously ovarian, the other, which also proved to be ovarian, was situated in the upper abdomen Both showed teeth on X ray examination The chest was pushed upwards, the costal angle being about 130° The diaphragm was higher than normal and the lungs came down to the level of the 9th dorsal spine behind The apex-beat was in the third left intercostal space when supine Blood-pressure 130/100 mm Hg, hæmoglobin 76%, red count 4,750,000 Renal function appeared to be normal

Premedication was omnopon, gr ⅓, and scopolamine, gr 1/150, three quarters of an hour beforehand Anæsthesia was induced with 0 25 g of pentothal, followed by nitrous oxide and oxygen A subcostal field block was made with 150 c cm of 1/1000 percaine, and a posterior splanchnic block with 40 c cm of 1% procaine Eight minutes later there were sudden generalised convulsions, violent and continuous, which were controlled in about a minute by 0 15 g of pentothal Artificial respiration was started, with oxygen The blood pressure, taken for the first time, was 60/40 mm Hg After eight minutes the convulsions recurred, being controlled once more in about a minute The blood pressure being unrecordable, ephedrine, gr ¼, was given intravenously Two minutes later the blood pressure had risen to 115/85 mm Hg, and after an uneventful pause of seven minutes the operation began The first stroke of the knife restarted convulsions which were controlled in half a minute and did not recur Again the blood pressure had fallen, to rise spontaneously It seemed that artificial respiration would have to be continued for some time and a soda lime canister was introduced With eventration of the upper cyst there was an immediate improvement, the apex beat dropped 1½ in necessitating the readjustment of a stethoscope diaphragm which was strapped to the chest The blood pressure rose steadily to the preoperative level, but the pulse continued to rise Fifteen minutes later spontaneous breathing started after an interval of 65 min, and the corneal reflex had returned

The upper cyst weighed 26 lb and the lower rather less than half that Her true weight, therefore, was only 7 stone, and the amount of percaine used should not have exceeded 105 c cm In addition to 150 c cm of percaine I had injected 40 c cm of 1% procaine, having a similar toxic effect There was no question of accidental intravenous injection, which is probably ruled out, too, by the time interval Both the procaine and the percaine were analysed and found to be in order Anæsthesia and muscular relaxation were excellent, towards the end of the operation, when largely recovered, the patient objected strongly to manipulations in the pelvis which of course was not anæsthetised

The convulsions were generalised from the start with no warning twitches of the face, and there were no intermissions, yet they were easily controlled by small doses of pentothal In this case as in the others respiratory failure was present from the start, suggesting the advisability of reducing the dose of pentothal to a minimum

That the tumours were causing her considerable physiological embarrassment, in spite of the absence of symptoms, is shown by the well-marked improvement after eventration of the larger cyst Her general condition at the end of the operation was very satisfactory and further restorative measures were cancelled Her colour was always good and she remained warm and her lungs dry

DISCUSSION

In the first and third cases described an overdose of percaine may have been responsible for the convulsions, though it is more than probable that a similarly large dose has been given on previous occasions without any untoward effect The amount should be limited to 15 c cm of the 1/1000 solution per stone body weight, and in its calculation allowance should be made for such factors as the presence of large tumours whose poor blood-supply excludes them from sharing in the rapid absorption of drugs of any sort

In the second case the dose was correct, and was in fact less than that used on a later occasion, but there were the complicating factors of severe jaundice and fever One hesitates to give large amounts of the more toxic anæsthetics, such as ether, to such a patient and would prefer not to deny her the many benefits of local anæsthesia It would, perhaps, be advisable to dilute the percaine to 1/2000, and the dose to half of that calculated by weight This principle should probably be applied to all local anæsthetic agents

It is essential that the convulsions be controlled early, else the patient will certainly die Pentothal should be used even in the presence of circulatory collapse, which cannot adequately be treated until its cause has been neutralised Pentothal, in my view, is preferable to pentobarbital or barbital as their prolonged action is not necessary for the control of the convulsions and will add to the general depression[2] For the same reason the dose must be minimal

Artificial respiration with oxygen will be necessary, and the circulatory depression will respond to intravenous saline, if necessary, adrenaline or ephedrine, again in minimal doses, may be given rather than convulsants such as nikethamide and leptazol

SUMMARY

Within a year, three cases of convulsions, one fatal, were seen after the injection of percaine for abdominal field block Two had received what is now realised to be an excessive amount The other had severe obstructive jaundice and fever

The amount of percaine should be limited to 15 c cm of 1/1000 solution per stone of body-weight, the dose must be reduced for extreme youth or age and for toxæmia, cachexia, jaundice and fever

Convulsions must be controlled immediately by the intravenous injection of minimal quantities of pentothal or hexobarbitone The injection may be repeated if necessary

Artificial respiration with oxygen will be necessary for the respiratory failure which usually follows the convulsions

Circulatory collapse may be countered by intravenous infusion of saline, or by intravenous injection of adrenaline or ephedrine, which antagonise the effect of local anæsthetic agents on the myocardium The use of convulsants, such as nikethamide or leptazol is questionable

My thanks are due to the surgeons, Mr G T Mullally and Mr Stanley Lee, and to Dr Russell Davies for permission to give an account of the first case

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SWEET USE FOR SOUR MILK —Dr Austin Priestman writes, for the benefit of those who are not already doing their duty by sour milk "A very pleasant cheese may be made by the use of sour milk which is merely hung up in muslin and allowed to drain for 12–24 hours (overnight is sufficient) The whey is discarded and to the remaining solid material is added a little salt and a little cream"—presumably from the top of the next day's milk "These are stirred and some aniseed or other flavouring added according to taste"

HOSPITAL OR DOMICILIARY CONFINEMENT?

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I HAVE analysed antenatal records and breast-feeding figures in Leyton for 1939 and 1940 to bring out some changes effected by the war, and have discussed aspects which, in my opinion, have influenced the trend towards institutional confinement

BIRTHS AND ANTENATAL RECORDS

The distribution of hospital beds for midwifery has been altered by the war In large towns which are evacuation areas fewer hospital beds are available for maternity cases, while a large number have been made available in country or reception areas Leyton is one of the extrametropolitan boroughs included under the LCC evacuation scheme for Greater London In the last ten years an increasing proportion of expectant mothers were being confined in institutions (table I)

TABLE I—REGISTERED BIRTHS IN LEYTON FROM 1931 TO 1940

Registered births	Year—									
	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
In institutions	546	585	687	630	716	760	767	860	845	692
At home	1266	1081	812	824	777	661	653	649	556	609

This increase occurred in spite of the fact that there is no municipal maternity home in the borough, the bulk of the institutional births were distributed in three hospitals in neighbouring boroughs One of the three, with which the borough council had an agreement for maternity cases dealt with approximately 300 Leyton cases yearly This hospital closed its maternity beds at the beginning of the war, so that the immediate effect on the Leyton midwifery service (except in September, 1939, when there was a temporary evacuation of expectant mothers) was an increase in domiciliary midwifery This continued until September, 1940, and though the actual number of confinements in the borough decreased by about 45% for the last three months of 1940 the proportion of domiciliary to institutional births remained greater than it had been before the war

Of the 692 institutional births for 1940, 202 were of women who had been evacuated, so that of those who were confined in the London area 609 were confined at home and only 490 in hospitals Since 1936 the hospital births had exceeded the domiciliary, by 100 in 1936 and 1937, by 200 in 1938, and by nearly 300 in 1939 But in 1940 the domiciliary births exceeded the hospital births (of the non-evacuated) by over 100 Thus a sudden reversal took place in hospital and domiciliary births, at a time when the home conditions were more overcrowded than they had been for years, in the opinion of the practising midwives

The case-records from the municipal antenatal clinics for 1939 and 1940 are worth comparing, since two-thirds of the 1939 records were completed before the war Only records where the result of the confinement is known have been included Table II shows the number of cases which were entirely normal, and the various abnormalities among the remainder Every case where the blood-pressure was rising and the diastolic reached 90 mm Hg or over has been included as toxæmia, even though no symptoms developed There is not much difference in the figures for the two years The percentage of normal cases is only 3% lower in 1940 (78 7% against 81 4% in 1939) This is perhaps surprising, for there were several months during 1940 when clinics were often interrupted by air-raid warnings, and for a time it was not considered advisable to urge normal multiparæ to attend clinics Besides the possible danger in moving to and fro, there was often delay in getting home, where mothers had usually left children in charge of a neighbour, so the supervision of these normal multiparæ was left to their midwives The 1940 figures are therefore weighted, and indeed it seems likely that even the 1939 figures have a larger proportion of first pregnancies than the average for the borough, since primiparæ made up 45 8% and 48 1% of the numbers in 1939 and 1940 (table III) It is noteworthy that even in a series like this, including a proportion of cases sent to the clinic because they were abnormal, almost 80% of patients had normal pregnancies There was only one death in 729 cases attending over the two years

Before the war the woman herself chose whether she would have her baby in an institution or at home, but if those who had booked a midwife were considered unsuitable for domiciliary confinement it was usually possible to induce them to change their minds The reduction in the number of hospital beds available for maternity cases in London since the war has made it necessary to admit to hospital only those in whom a medical reason for admission is present, or whose accommodation at home is unsuitable for confinement

Comparing the two years, in 1939 approximately 3 primiparæ went to hospital for every 2 who stayed at home, whereas in 1940 1 went to hospital for every 1 who stayed at home Although there were 23 more primiparæ in the 1940 figures there were 2 fewer abnormalities than in 1939, and a larger proportion of the abnormal cases were delivered in hospital in 1940 In second and third pregnancies approximately equal numbers were delivered in hospital and at home in 1939, while in 1940 the proportions were 2 3 in second and 5 7 in third pregnancies Again, the abnormalities were concentrated more in hospital in the 1940 cases, while they were evenly distributed in hospital and at home in the 1939 cases In four and subsequent pregnancies a larger number were confined at home than in hospital in both years, although the proportion was greater in 1940 This is interesting because it is commonly argued that lack of accommodation is an important factor in the increasing preference of mothers for institutional confinement

TABLE II—CASE-RECORDS OF 729 PATIENTS ATTENDING MUNICIPAL ANTENATAL CLINICS IN 1939 AND 1940

—	1939 All cases	1940 All cases
Normal	284	299
Toxæmia	18	13
Instrumental delivery	11	13
Breech	7	8
Stillbirth	5	9
Prematurity	4	9
Prolonged labour	1	6
Occipito post	5	1
Induction	0	3
Cæsarean section	0	3
Other abnormalities	10	10
General diseases	4	5
Total	349	380

TABLE III—NUMBER OF PREGNANCY AND PLACE OF CONFINEMENT IN ALL CASES AND IN ABNORMAL CASES

No of pregnancy	Confinements 1939		Confinements 1940	
	Hospital	Home	Hospital	Home
All cases				
1st	97	63	92	91
2nd	46	42	40	60
3rd	22	25	15	21
4th	8	11	8	21
5th or more	11	24	4	28
Total	184	165	159	221
Abnormal cases				
1st	32	18	34	14
2nd	4	5	12	4
3rd	1	1	5	3
4th	0	3	6	0
5th or more	1	0	1	2
Total	38	27	58	23

Taking the total figures, in 1939 the proportion was approximately 37 in hospital to 33 at home, while in 1940 it was 32 in hospital to 44 at home Of the abnormalities 13 were delivered in hospital to 9 at home in 1939, and 29 in hospital to 11½ at home in 1940 Allowing for the partial selection in the 1940 figures, and for the air-raid conditions between September and December, 1940, it cannot be said that the increased domiciliary midwifery in 1940 increased the proportion of abnormal cases It must be realised too that the home circumstances in 1940 were less suitable for domiciliary confinement than before the war, because families crowded together more, and the room selected for confinement was the smallest rather than the largest, with a correspondingly small window

TABLE IV—DISTRIBUTION OF PRIMIPARÆ AND ABNORMAL CASES IN AGE GROUPS IN 1939 AND 1940

Primiparæ

Age (yr)	Confinements 1939		Confinements 1940	
	Hospital	Home	Hospital	Home
Under 20	22	8	9	9
20–25	41	25	38	37
25–30	23	25	31	33
30–35	8	5	11	10
35–40	3	0	3	2
Abnormal cases				
Under 20	7	1	1	2
20–25	13	18	11	4
25–30	6	7	16	7
30–35	3	2	3	3
35–40	3	0	1	0

I have not worked out for the whole series the percentages in each age-group of those who were confined in hospital in 1939—when the choice was made by the woman herself—but the figures for that year show that in the three age-groups which contain the bulk of the primiparæ (under 20, 20–25 and 25–30 years) the largest proportion went to hospital in the youngest age-group, and the smallest proportion in the oldest age-group (table IV)

TABLE V—COMBINED FIGURES FOR 1939 AND 1940 OF PRIMIPARÆ IN AGE GROUPS

Age (yr)	Confinements	Abnormal cases
Under 20	48	11 (23 %)
20–25	141	36 (25 %)
25–30	112	36 (32 %)
30–35	34	11 (32 %)
35–40	8	4 (50 %)

The percentage of abnormalities (table V) shows a rising figure from the youngest to the oldest age-group It appears therefore that if any medical discrimination is to be made in allocating cases to hospital a larger proportion of the older primiparæ should be admitted to hospital and a smaller proportion of the younger primiparæ This is the reverse of what was happening in Leyton before the war, if it is allowed that the 1939 experience was not exceptional

In the series of cases analysed instrumental-deliveries were seven times more frequent in primiparæ than in multiparæ, and their frequency was related to the age of the primipara occurring once in 48 deliveries in primiparæ under 20 years, and once in 8 deliveries in primiparæ between 35 and 40 Breech deliveries occurred almost entirely in primiparæ, and showed a less definite relation to age Toxæmia was twice as common in primiparæ as in multiparæ and the risk appeared to be nearly as great in the younger age-groups as in the older Stillbirths and prematurity were evenly divided among primiparæ and multiparæ, and showed no definite relation to age Stillbirths are really a mixed group, those which result from difficult labour, and those which are due to disease of the mother or maldevelopment of the fœtus

BREAST-FEEDING

In order to assess more fully the results of midwifery in Leyton in 1939 and 1940, I followed up the breast-feeding of the infants born in these years I asked each health visitor to give me 100 birth cards, chosen at random from a variety of streets in her district I divided the cards into hospital and domiciliary births, and subdivided them according to the number in family and the success or failure of breast-feeding The standard I set for successful breast-feeding was that no complementary feed of milk had been given before the infant was six months old, although I accepted a minority who could not be followed up, where there was evidence that the weight had reached 14 lb while the infant was comple breast-fed The number of records finally dealt with was 357 of the 1939 births, and 309 of the 1940 births Of these, 178 or 49 8% were born in hospital and 148 or 41 4% at home in 1939, and 111 or 35 9% in hospital and 186 or 60% at home in 1940 The remaining small percentage were born in nursing-homes

The health visitor makes her first visit when the baby is 14 days old If an artificial feed is being given by that time, one is justified in assuming that the attendant (midwife or doctor) during the puerperium has not been successful in establishing breast-feeding The heading " Artificial " in table VI contains those cases in which artificial feeding had been started before the baby left hospital, or, in the domiciliary births, before the midwife completed her nursing In 1939, of 178 babies born in hospital, 17 4% were being artificially fed before they left hospital, and 47 5% of the mothers made a success of breast-feeding, of 148 babies born at home, 7 4% were being artificially fed before the midwife left, and 50 7% of the mothers successfully breast-fed their babies In 1940, of 111 babies born in hospital, 21 6% were receiving artificial feeds before they left hospital, and only 40 5% of the mothers breast-fed with success, while of 186 babies born at home, 8 5% were artificially fed before the midwife left, and 50% of the mothers made a success of breast-feeding I consider the percentages very disappointing, but Robinson (1939) found that in 1937 in Liverpool only 29% of babies were on the breast at six months

The most striking difference between the hospital and domiciliary cases is the increase of 10% in the hospital group in the number of babies who were artificially fed within two weeks of birth In 1940 the percentage of babies who were successfully breast-fed was 10% higher in the babies who were born at home than in those who were born in hospital It might be contended that this difference was due to the larger proportion of abnormal cases in the hospital group in 1940, but in 1939 the hospital cases contained only 4% more abnormalities than the domiciliary group, and yet the percentage of babies who were receiving artificial feeds within two weeks of birth was 10% higher in the hospital than in the domiciliary group An inquiry carried out in Birmingham (Cassie 1938) showed that of babies born in institutions 5 8% were artificially fed while the mothers were under the care of the midwives, but of those born on the district only 0 96% were artificially fed

TABLE VI—HOSPITAL AND DOMICILIARY MIDWIFERY IN RELATION TO BREAST AND ARTIFICIAL FEEDING

In 1939

Pregnancy	Hospital				Domiciliary			
	Cases	Artificial	Breast		Cases	Artificial	Breast	
			tried	success			tried	success
1st	111	21	90	53	47	6	41	26
2nd	33	5	28	17	46	3	43	21
3rd	19	1	18	9	23	1	22	19
4th and later	15	4	11	6	32	1	31	16
Total	178	31 (17 4 %)	147	85 (47 5 %)	148	11 (7 4 %)	137	75 (50 7 %)
In 1940								
1st	67	16	51	33	66	10	56	31
2nd	30	6	24	7	57	2	55	32
3rd	6	1	5	1	26	2	24	13
4th and later	8	1	7	4	37	2	35	17
Total	111	24 (21 6 %)	87	45 (40 5 %)	186	16 (8 5 %)	170	93 (50 %)

DISCUSSION

The figures analysed are small but representative of pregnancies occurring in an artisan district of Greater London The increasing hospitalisation of midwifery is not peculiar to Leyton, it is common to most urban areas, and although I do not find that consultant obstetricians recommend that the average normal confinement should take place in a hospital there are medical officers of health and medical officers of municipal clinics who press it. One former medical officer, without producing facts to support his view, recently wrote an article entitled "Domiciliary midwifery—a modern anachronism." It seems likely that this idea, where it exists, has been fostered by the fact that medical officers of health must investigate every maternal death, but may have no contact with normal childbearing. The inevitable result of concentrating on the abnormal, especially where the final result is the death of the mother, is to create an impression in the mind that only by preparing for every eventuality can one hope to achieve successful childbearing. Six official reports on maternal mortality in England, Scotland and Wales have been issued since 1930.

Other medical officers argue that if the woman herself wants institutional confinement, she ought to be allowed to have it. This raises the questions, why has hospitalisation become so popular, has it any disadvantages, and is the mother the best judge of where she should be confined?

Probably the commonest argument advanced by the mother in favour of institutional confinement is lack of adequate accommodation at home. That is the first reason given by Leyton mothers who want to have their confinements in hospital, but the distribution of cases in 1939 and 1940 does not suggest that this is the true reason. Young primiparæ in some cases may be poorly equipped with bed-linen and cooking utensils and some may be unmarried—circumstances which make institutional confinement necessary. The illegitimacy factor does not bulk largely in these figures as only 4 unmarried mothers attended in each year. Some young married couples certainly had homes so poorly equipped that it was essential to recommend hospital for the first confinement, but this was more obvious in 1940 than in 1939. The difference in the distribution of hospital and domiciliary births in the two years (i.e., a smaller proportion of all cases, and especially of young primiparæ, delivered in hospital in 1940) is essentially the result of the mother being advised in 1940 where to have her confinement, instead of, as in 1939, making the choice herself. It would be inaccurate to say that hospital beds were not available in 1940. There were fewer hospital beds, but I had no difficulty in securing admission for every case I recommended either on medical grounds or because of home circumstances. The custom of letting the mother decide whether she should have her confinement in hospital probably arose when hospital confinements were less popular, and the training needs of pupil midwives and medical students resulted in cheap facilities being offered for institutional confinement.

Cost is probably the first thing most mothers consider in deciding. Some evidence of this was supplied by analysing the percentage of Leyton mothers at various incomes who selected hospital confinement in 1938. They were assessed according to the husband's income, allowance being made for rent and for the number of children in the family. It was found that where the fee was totally remitted the number entering hospital represented 10% of all the maternity cases at this scale of income in the borough. Where the husband's income was less than 15*s* per week above the remission figure approximately 25% of the mothers went to hospital, and when the income was between 15*s* and 35*s* above the remission figure approximately 50% chose hospital confinement. If the income was over 35*s* per week above the remission figure, the full fee (then £5 for ten days in hospital) was charged. At this level of income only 15% went to hospital. A hospital charge of £5 is not obviously cheaper than the cost of domiciliary confinement in a district where £2 is the full fee for a midwife with possibly another £2 for a home help, so that this fall in the percentage of admissions at the top of the income scale does not weaken the argument.

The position in Leyton before the Midwives Act, 1936, came into operation was probably not exceptional. At that time women who wanted to have their babies in hospital were assessed according to their means. Women who booked a private midwife were not assisted with the payment by the borough council. The inevitable result was to produce a bias in favour of hospital confinement. If this was happening in other areas no fair estimate can be made of the real demand for institutional confinement as such. The costing returns of the Ministry of Health show that the cost of running a maternity hospital may be as much as £10 per patient per week, and that the average for maternity hospitals in the London area in 1936 was £6 per patient per week. Each case therefore cost about £10, or more if the period in hospital was extended to 14 days.

In Leyton in 1940, 600 cases were dealt with under the domiciliary midwifery scheme, at a cost to the borough of £1700 (this includes £230 which was expended on home helps). This is less than £3 per case. If these 600 cases had been confined in a municipal maternity hospital the cost to the borough would have been greater than the present total expenditure for maternity and child welfare in the borough. To justify such expenditure one would have to be satisfied that the average normal maternity case benefits from being confined in hospital.

The second factor which, in my opinion, has encouraged women to ask for hospital confinement to an increasing extent in the last ten years is fear of pregnancy and of labour. When one remembers the wide and repeated publicity given to figures of maternal mortality one cannot be surprised if the pregnant woman imagines she is running a grave risk by having a baby. "Hospitalisation and the prominence given to the subject of maternal mortality is liable to produce a distorted view in the mind of the pupil."[1] If a distorted view may be produced in the mind of the pupil midwife, how much worse is the effect on the mind of the woman who is going to have the baby. There seems to be some evidence that insistence on the necessity for antenatal supervision may have the unfortunate effect of making women feel there must be something wrong with them instead of engendering confidence in their capacity to bear children normally. Since air-raids developed one finds that women returned from relatively safe areas to danger areas because they could not attend antenatal clinics easily in some of the country areas. The real danger from bombing was a lesser fear to them than the anxiety about their pregnancy or labour. One was inclined to feel impatient with such a reason for return from evacuation. A healthy young woman ought to be full of confidence about her childbearing capacity. "The plain fact that the risk of dying between ages 25 and 60 is smaller for the average married woman than the average single woman in the population, despite the risks attendant upon pregnancy and childbirth, is one which might usefully be stressed as a corrective to exaggerated fears of maternity" (Registrar-General 1935). Hospital confinement certainly surrounds childbearing with an atmosphere of abnormality. Although three out of four women in a ward may have had normal labours, they are in daily and nightly contact with the fourth who may have had a difficult time. By the end of a fortnight there is probably little they do not know of her sufferings. As it is the abnormal which impresses, they can hardly fail to be influenced by what might have happened to them. The more pregnant women are encouraged—by medical men and women, by nurses, by mothers, by husbands, and by the press—to think that their pregnancy is a source of danger to them, the more likely are they to feel they ought to be confined in hospital.

The mother herself is not necessarily in a position to know where it will be best for her to have the baby; she ought to be advised by her doctor or midwife. I have known medical men and women (more often those who have administrative contacts with midwifery rather than clinical experience) argue that hospital confinements should be recommended because they are "safer." Those who hold this view will probably consider that to produce breast-feeding statistics as evidence in favour of domiciliary confinement for the average normal case is beside the point. Is breast-feeding after all of much importance? I think perhaps it may be. The rapid fall in the birth-rate in the last 50 years exercises those who are interested in the future of the race; the decline in breast-feeding may be related to this fall It has been observed that the more highly cultured sections of the community have fewest children, and they tend to have more complicated labours The principles of labour do not differ between the classes, but as Read (1933) has pointed out, the attitude towards it does For the Whitechapel mother, he says, " Trouble, disaster and pain as an accompaniment to the birth of her children is not the picture that is uppermost in her mind To be childless is still a shame amongst the poor—to have a large family is still a joy " The woman who accepts childbearing and looks forward to it has a better chance of breast-feeding and is more likely to have several children than the woman who is full of fears The cultured attitude to labour in spreading downwards through the social classes It may be that increasing hospitalisation of midwifery has effects inimical to childbearing, which are not obvious from studies of maternal mortality

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[1] Central Midwives Board. 'Suggestions and instructions regarding the conduct of the course of training of pupil midwives.'

SUMMARY

In Leyton in the last ten years there has been a noticeable decrease in domiciliary births with an increase in institutional births Since 1936 the institutional births have been over 50% of the total births In 1940, for the first time in ten years, the number of domiciliary births is greater than in the preceding year

The case-records from the municipal antenatal clinics for 1939 and 1940, which are weighted with primiparæ in 1940 and with abnormalities in both years, show 81% normality in 1939 and 78% normality in 1940 There is no evidence from these records that the increase in domiciliary midwifery in Leyton in 1940 has coincided with an increase in abnormality

Before September, 1939, the choice of institutional or domiciliary confinement was left to the mother Since September, 1939, the number of beds in London available for maternity cases has been reduced, and institutional confinement of Leyton mothers who were not evacuated has been reserved for those in whom a medical reason for admission is present, or whose accommodation at home is unsuitable for confinement

The 1939 figures show that when the mother made her own choice the youngest primiparæ went to hospital in greatest numbers, with the multiparæ, the larger the family the smaller the proportion of institutional births

The combined abnormalities in primiparæ for 1939 and 1940 show an increasing percentage from the youngest age-groups to the oldest

Analysis of a random sample of birth cards in Leyton, for 1939 and 1940, shows that a larger proportion of babies born in hospitals receive artificial feeds before they are fourteen days old than of babies born at home

The popularity of institutional delivery is probably due primarily to the relatively small charges made for hospital confinement as opposed to domiciliary, and secondarily to fear of pregnancy and labour

The mother herself is too often influenced by prejudice, and her sources of information are incomplete and inaccurate She is not in a position to make a wise decision as to where she should be confined, but should be advised by her doctor or midwife

Institutional delivery is at least three times as expensive as domiciliary midwifery, as practised in an artisan district of Greater London, and unless it can be shown that the normal case benefits from institutional delivery, the charge to the patient ought to bear more relation to the cost to the community

Too great concentration on the abnormal may have led a section of medical opinion to recommend institutional confinements for the normal, who constitute at least 80% of the whole

There is some evidence that insistence on the necessity for antenatal supervision may have developed fears in the pregnant woman A wider view of maternal care might lay greater stress on education of the mental attitude of the pregnant woman towards childbearing

The views expressed in this article are personal, and do not represent the opinion of the borough of Leyton

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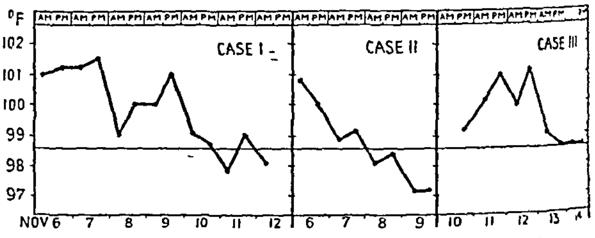
ILLNESS IN SMALLPOX CONTACTS

J C Bowe, M B BELF, D P H
SQUADRON-LEADER R A F
(*From a Royal Air Force Hospital*)

A Royal Naval rating was admitted to a casualty clearing station on Oct 25, 1941, with confluent smallpox which he had contracted in the Persian Gulf He first felt ill on Oct 21, was admitted to the sick bay on Oct 23 and then transferred ashore His condition deteriorated rapidly and he died on the morning of Oct 28

Contacts with the case at the CCS were continuously, 1 medical officer and 2 nursing orderlies, on single occasions, 4 medical officers, one of whom carried out a comprehensive physical examination All contacts were revaccinated on Oct 27–28 and gave typical 24–48 hours immune reaction There were 8 other contacts among embarkation and ambulance staff Of these 15 contacts, 3 men developed febrile illnesses within 8–15 days of contact with the rating The ship had sailed and it has not been possible to ascertain the history of contacts on board

CASE 1—On Nov 6 (12 days after first exposure) the medical officer in charge of the rating developed a febrile illness with severe prostration, headache and backache There was little to find on examination Fauces, cardiovascular system, lungs, abdomen, central nervous system and urine were normal Apart from a secondary anæmia (presumably present for some time) there was no abnormality in the blood-picture Urine and blood cultures proved sterile The temperature dropped to 99° F on the third day when the rash would be expected in variola vera, and there was some amelioration of symptoms His temperature rose to 101° F again on Nov 9 but next morning was normal (fig *a*) and he felt better Lassitude persisted for some time and convalescence was protracted



(*a*) (*b*) (*c*)

CASE 2—On Nov 6 one of the nursing orderlies in charge of the rating complained of headache and backache and was admitted with a temperature of 101° F He was constipated and was given an enema Next morning he was afebrile (fig *b*) and felt and remained fit

Cases 1 and 2 had received 0 75 c cm TAB vaccine on Nov 3 with local and general reactions, and both were fit on Nov 4

CASE 3—On Oct 27 the medical specialist at the RAF hospital visited the CCS and examined the rating He visited the medical officer (case 1) on Nov 8, and on the morning of Nov 10, while returning to hospital, he developed retro orbital headache and that afternoon malaise and headache with a temperature of 99 6° F He was admitted to hospital on Nov 10 and the illness reached its peak on Nov 12 (fig *c*) The fauces were congested and there was a spot of exudate on the right tonsil, but during the previous month he had been having outpatient treatment for a mild chronic pharyngitis which caused only slight discomfort and no general reaction Cardiovascular system, lungs and abdomen normal Blood and urine cultures were sterile and blood picture was normal Lassitude persisted for some time and convalescence was protracted

No illness of the same kind occurred among contacts of these three cases

DISCUSSION

Conybeare[1] reported 7 cases of febrile illness in contacts with smallpox, in only 2 of whom were there skin eruptions He quotes numerous clinical descriptions of smallpox without eruption published by many workers, some of whom maintain that the toxæmia of smallpox is seldom infectious The apparent incubation period in his series was 7 days, while in cases 1 and 2 described here it was 12 days and 14 days in case 3

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[1] Conybeare, E T *Lancet* 25

It is suggested that the illness was related to contact with smallpox and may have been a modified form of smallpox The MO (case 1) had been successfully vaccinated as a child and all revaccinations (before numerous visits to the United States and in December, 1940) had been unsuccessful He had also been in contact with cases in the USA The sudden onset with fever, headache and backache and amelioration of symptoms with fall of temperature on the third day were suggestive, though the absence of rash and recurrence of fever did not confirm the diagnosis of smallpox The illness was ascribed to the effects of typhoid inoculation, but his good health on Nov 4 and absence of local reaction during the *illness seem to* contradict this diagnosis In case 3 the throat signs were insufficient to account for the severity of the illness, these signs had been present for some time and he had remained fit until the sudden onset on Nov 10 He had been successfully vaccinated as a child and again in January, 1939, with moderate degree of reaction Revaccination on Oct 28 gave no reaction

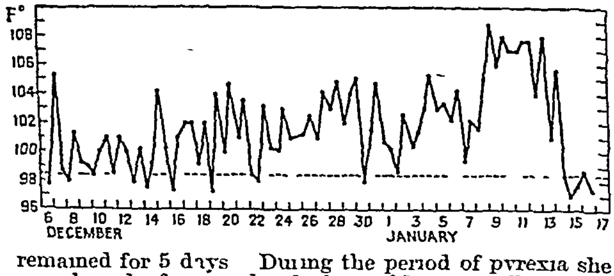
All 3 cases were close contacts—two continuous and the third on a single occasion—so if the illness was smallpox modified by vaccination, close contact with the patient appears to be necessary for infection

I am indebted to Group Captain R S Overton for permission to publish this note and to Squadron Leader R D Bruce for access to his records

HYPERPYREXIA DUE TO HYSTERIA

F P Duras, M D Vienna
HOUSE PHYSICIAN AT THE GENERAL HOSPITAL, NORTHAMPTON

An ATS girl, aged 30, was admitted on Nov 21, 1941, to the ear, nose and throat department with a temperature of 103° F, complaining of pain in both ears, headache, and pains in the lower abdomen There was no discharge from the ears, slight menstrual bleeding per vaginam Two days before admission she had been vaccinated, after which she was stated to have fallen down and knocked her head Both eardrums showed old central perforations but neither middle ear was inflamed, and it was thought that her pyrexia could not be caused by an ear condition Gynæcological examination showed nothing abnormal She was transferred to a medical ward where she developed a swinging septicæmia-like temperature which lasted 6 weeks (see figure) For the first 3 weeks it fluctuated between subnormal and 103°–104° F During the 4th week it was often 105° F and only twice normal Towards the end of the 5th week it reached 108° F where it remained for 5 days During the period of pyrexia she complained of severe headache, giddiness, stiffness and tenderness of the neck, of the whole spine and kidney region She had occasional attacks of shivering



Thorough clinical examination did not reveal anything abnormal X rays of the skull, the whole spine, the chest and an iodoxyl filling of the renal tract were negative Repeated white-cell counts were between 5000 and 6000 with normal differential counts Several blood-cultures were sterile, and two lumbar punctures gave a clear cerebrospinal fluid at normal pressure with normal protein, glucose, chlorides, and cell content, as well as sterile smear and culture Sedimentation-rates of the blood were between 2 and 8 mm an hour Nothing abnormal was found in the urine Agglutination test for typhoid and paratyphoid was negative Treatment which included sulphapyridine, 'Soluseptasine,' *strepto*coccal sera and antipyretics did not have the slightest effect There was no definite sign in support of her complaints She was restless, and at times did not seem clear mentally It was known that she was psychologically unbalanced and emotional, though good-hearted

At this stage it was questioned whether her temperature could be genuine During the 4th and 5th weeks the temperature was taken by a reliable sister who stood beside the patient during the taking Rectal temperatures at the same time corresponded to those taken by mouth In addition there seemed to be no available means by which the thermometer temperature could have been altered Major Ritchie Russell when consulted confirmed the provisional diagnosis of hysteria and when taken by him the temperature was *normal for the first time in a fortnight*

The patient confessed that she experienced a severe psychological trauma when 10 years old Whenever she thought of it, and while in hospital it was almost perpetually on her mind, she got very hot and perspired Since this confession the temperature has remained normal She was persuaded to try to produce the temperature again while concentrating *on the quoted* experience Unfortunately this stimulus did not act, and the temperature remained *normal* She was discharged on Jan 26, 1942, happy and with no complaints and went back to the ATS, but she has since been admitted to hospital as a fully-developed case of hysteria

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There seems to be no doubt about the existence of hysterical fever, and apparently authentic cases have been observed with continued or intermittent pyrexia with sudden jumps to 108° F and even 113° F The absence of the corresponding accessory symptoms is characteristic An excellent survey of hyperthermia, genuine and spurious, has been made by MacNeal[1]

DEATH FROM PHENOTHIAZINE POISONING

D R Humphreys, M B Birm, M R C P
RESIDENT MEDICAL OFFICER AT QUEEN ELIZABETH HOSPITAL, BIRMINGHAM

A SCHOOLGIRL of 6 years was admitted to hospital on Dec 23, 1941, because of pallor and vomiting She had been well until Dec 7, when she complained of rectal irritation, and her doctor was consulted six days later and diagnosed threadworm infestation Phenothiazine was prescribed in a dose of 2 grammes daily On Dec 13 the girl took 1 5 g and on the 14th and 15th 2 g each day The mother noticed a few black threads in the stools, but it was difficult to decide later from her description whether they were stained threadworms or not On the 16th the child looked rather pale, but had 2 g again On the 17th she was tired and looked a *little* yellow, and she was given only 1 g on this and the next day—a total of 9 5 g over a period of six days On the 20th she looked ill and began to vomit, and was kept in bed until her admission to hospital three days later

On admission she was pale and ill-looking with a very slightly icteric colour Her temperature was 102 4° F, *pulse rate* 130 and respiration rate 25 per min The spleen and liver were not palpable, there were no hæmorrhages, and nothing else abnormal was found on examination Blood-count on admission was as follows

Red cells, 1,250,000 per c mm
Hæmoglobin 26%
Colour index, 1 04
White cells, 16,800 per c mm

Polymorphs, 71%
Lymphocytes, 24%
Monocytes 3 7%
Metamyelocytes, 0 3%

In a differential count of 300 white cells 35 normoblasts were seen
Reticulocytes 22 6% Platelets, 236 000 per c mm

On Dec 24, 300 c cm of blood was given by drip over a period of 3 hours Half an hour after conclusion of the transfusion she had a rigor Temperature rose to 106 8° F and the *pulse rate* to 164 per min She was given fluids and alkalis in large doses, but became worse, incontinent and gradually *comatose* She died about 11 hours after the transfusion No threadworms were passed during her period in hospital

Autopsy was performed by Prof Haswell Wilson 36 hours after death The body was of average development and fairly well nourished It was anæmic in appearance with a just perceptible trace of jaundice of the skin and conjunctivæ

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[1] MacNeal, W J *Arch intern Med* 1939, 64 806

The pericardial sac was normal There was soft jelly-like antemortem clot in the right side of the heart The right ventricle was dilated There was no lesion in the valves, and the muscle was pale from extreme anæmia The lungs were free from adhesions Both were poorly aerated and slightly œdematous at the bases, and were pale from anæmia There was no evidence of bronchitis or pneumonia The peritoneum was normal The liver was pale from anæmia, there was no visible fat, and nothing in the gross appearance to suggest toxic hepatitis The spleen was dark red and firm The kidneys were pale, and there was nothing to suggest nephritis The alimentary tract showed no evidence of inflammation or other abnormality, and no threadworms were seen The brain and its membranes were anæmic in appearance, but there were multiple small hæmorrhages in the region of the corpus callosum The rib marrow was fluid and dark, and the femur marrow was abundant and dark red Section of liver showed no evidence of toxic hepatitis

The blood-picture, and the contrast between the dark red spleen and marrow and the pallor of the other organs is characteristic of an acute hæmolytic process It is interesting that the hæmolysis, which evidently began on the third day of phenothiazine administration, should progress so alarmingly several days after administration had ceased

Anæmia following phenothiazine medication was recorded first by de Eds, Stockton and Thomas,[1] and was of hæmolytic type with high reticulocytosis Hubble[2] recorded three cases of anæmia, in one of which the count fell to 2,900,000 per c mm with 10% reticulocytes, but in which jaundice was a well-marked feature, and he suggested that hepatitis was the chief toxic effect In the case here recorded jaundice was barely perceptible, and the liver was practically unaffected

I wish to thank Prof K D Wilkinson for permission to publish this case, and Prof Haswell Wilson for the report on the autopsy and sections

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Reviews of Books

Radiology Physics

John Kellock Robertson, F R S C , professor of physics, Queen's University, Kingston, Canada London Chapman and Hall Pp 270 18*s*

Professor Robertson's book is described as an introductory course for medical or pre-medical students and for all radiologists It is a clear and accurate exposition of the technical and physical considerations lying at the basis of modern radiation therapy and diagnosis, containing chapters on alternating currents, the production of high voltage, the measurement and control of high tension voltage, cathode rays, positive rays and isotopes, roentgen-ray tubes, valve rectification, general properties of X rays, secondary X rays and absorption, roentgen-ray dosage, radioactivity, supervoltage tubes and high speed particles, artificial radioactivity and high-frequency currents The outlook is modern and the information up to date, for example, the section on radioactivity deals clearly with artificial transmutation, and descriptions of supervoltage equipment and of the cyclotron make an excellent introduction to the study of artificial radioactivity The emphasis, unlike that of many books on radiology, is such that the diagnostic radiologist will find much to interest him as well as the man whose main interest is therapy The book, well produced and illustrated as it is should serve well both students reading for the diploma and radiologists who wish to know more of the scientific basis of their craft

Immunity against Animal Parasites

James T Culbertson, assistant professor of bacteriology, College of Physicians and Surgeons, Columbia University, New York London Humphrey Milford, Oxford University Press Pp 274 36*s* 6*d*

In 1929 W H Taliaferro, in "The Immunology of Parasitic Infections," gave an authoritative account of the knowledge then available on the subject Professor Culbertson begins where Taliaferro left off and brings the subject up to date Work published before 1929 was cited fully by Taliaferro, that published later is equally fully listed in the present work, and for this alone the book would be valuable It deals consecutively with natural resistance to parasitic infections, age resistance, acquired immunity, immune responses and the mechanism of immunity Immunity following specific infections is discussed in relation to the amœbic infections, leishmaniases, trypanosomiases, malarial infections and coccidioses, and infestations with cestodes, trematodes, nematodes and some arthropods Finally it deals with various groups of parasites from the point of view of immunity resultant on infection and vaccination, and the production of characteristic immune responses of possible value in diagnosis The book is a valuable compendium of information for workers on parasitic immunology

A History of Science

(3rd ed) Sir William Cecil Dampier London Cambridge University Press Pp 574 25*s*

Thirteen years ago Sir William Dampier wrote, in comparatively short compass, a history of the evolution of science His book was enthusiastically received, and a second edition is now followed, after some ten years interval, by a third The history of science has been studied much of late, and the stream which formerly seemed to be disturbed and often interrupted now appears as a broad and continuous river Sir William has embodied much of this new knowledge in his work, and has outlined the wide prospects which now lie in view of the scientific inquirer Indeed, in his endeavour not to omit the smallest point worthy of notice, he has somewhat overburdened his main theme , but this does not detract from the review which he gives of the outstanding achievements of science, or his comprehensive vision of the essential unity of different aspects of man's study of the phenomena of nature He has emphasised that there is no real antagonism between science, metaphysic, and religion that philosophy, and not pure materialism, is essential for the continued progress of natural science "At such historic moments" he says of the great achievements of the masters "physical science seems supreme But the clear insight into its meaning which is given by modern scientific philosophy shows that by its inherent nature and fundamental definitions it is but an abstraction, and that with all its great and ever-growing power it can never represent the whole of existence Science may transcend its own natural sphere but to see life steadily and see it whole we need not only science but ethics, art and philosophy we need the apprehension of a sacred mystery, the sense of communion with a Divine Power, that constitute the ultimate basis of religion "

The Intervertebral Disc

F Keith Bradford, M D , and R Glen Spurling, M D London Baillière, Tindall and Cox Pp 158 22*s*

This book deals chiefly with the part played by the intervertebral disc in causing back pain and sciatica It is the first clinical monograph on the subject to appear in this country, and the authors have succeeded in condensing their own experience and a review of the rather voluminous published work into a slim and handy volume There are lucid chapters on the anatomy, physiology and pathology of the intervertebral discs, and the clinical picture is clearly drawn The indications for conservative treatment and operation are discussed , a useful series of representative case-reports will make many readers feel that this is a commoner lesion than they had supposed

Manual de Psicoterapia

Emilio Mira y Lopez, formerly professor of psychiatry in Barcelona University Buenos Aires Aniceto Lopez Pp 314

This comprehensive and readable treatise was prepared because Professor Mira believed it high time that psychotherapy should form part of the instruction of medical students in Latin America , there were already Spanish translations of standard works on the subject, propounding a particular doctrine or method, but no survey of the whole field He therefore amplified a series of lectures he had delivered in 1941, and hoped the book would serve to prevent the development of sectarian groups of psychotherapists in South America His presentation is broad and fair enough to succeed in this aim so far as a book can further it It is wider in its scope than any comparable F [illegible] ork

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[1] De Eds F , Stockton, A B and Thomas J O *J Pharmacol* 1939, 65, 353

[2] Hubble, D *Lancet*, 1941, ii, 600

THE LANCET

LONDON SATURDAY, JULY 11, 1942

EFFECT OF WAR-TIME FOOD ON CHILDREN

It should be possible to judge the adequacy of our children's diet by studying the state of their health, but there is as yet little information about child health during the war [1] and many changes besides diet may have influenced it, moreover, it is usually impossible from a purely clinical examination of an individual child definitely to correlate subnormal health with specific dietetic deficiencies unless they are gross The main effects of the war on diet have been a higher carbohydrate intake for civilians as a whole, including school-children, as a result of shortage of meat, fish, eggs, milk and fruit, a better diet for the poorest families, since there is now no mass unemployment and more money in the pockets of the poor (for poverty is the greatest cause of dietetic deficiencies in peace-time), and a fairer distribution of foodstuffs through rationing, the national milk scheme, and school and other communal meals, though these facilities still need extending The net result has been a levelling down of the diet of the majority of civilians towards that of the poor, and a levelling up of the diet of the poorest The inadequacy of the prewar diets of the poor scarcely needs stressing, but recent work in Toronto,[2] showing the remarkable effect on mothers and infants of supplementary feeding of expectant mothers, and the findings of the People's League of Health Survey published in these columns last week (p 10) emphasise the point once more, the poor Toronto diets resemble in many ways the present diet of most of us in Britain

The experience of Germany during and after the last war, when food shortage was acute, was that the growth of children was retarded, and the death-rate from tuberculosis rose rapidly and steadily [3] On the other hand, infant mortality declined in spite of severe food privation for the people as a whole, and, apart from the influenza pandemic, deaths from the common infectious fevers of childhood showed no tendency to rise Vitamin-deficiency diseases—rickets, scurvy, keratomalacia, and so on—increased These findings suggest subjects for review in this country where few observations on the growth of children under present-day war conditions have been published This spring MILLIGAN, with the help of LEWIS-FANNING of the statistical department of the Medical Research Council,[4] compared the growth of two groups of Glossop school-boys, observed in 1940–41 and in 1941, with similar groups observed between 1936 and 1939 Both war-time groups showed a significant reduction in rate of weight increase, the weekly rise in weight of the group observed in 1941, during the period of strict rationing, was less than half that of the prewar controls Glossop had been free from bombing and there seems no doubt that it was inadequate diet which retarded the boys' growth, though the actual deficiencies responsible are uncertain Yet the prewar heights and weights of Glossop boys were certainly far from optimal, and in 1938 Glossop boys aged 13 years were nearly a stone lighter than boys at this age at Christ's Hospital But BASHFORD [5] has found London 14-year-olds in 1941 at least as heavy as in 1938 Many more observations on rate of weight increase are urgently required, particularly on boys and girls over 14 years, who are particularly likely to be hard hit by rationing STOCKS [6] has reviewed the vital statistics of England and Wales in the second year of war Infant mortality (excluding air-raid casualties) rose on the average by 6½ per 1000 live births in the second four quarters of the war, compared with the four quarters immediately preceding the war, the first quarter of 1942 however promised better The efficacy of the sulphonamide drugs in many of the serious infections of infancy should have produced, but for adverse war influences, a definite drop in infant mortality comparable to the recent drop in maternal mortality. Important among these adverse effects are probably a diminished supply of breast milk—a subject on which information is now being collected—and an increase in anæmia among infants Recent death-rates from the four common infectious fevers—diphtheria, whooping-cough, measles and scarlet fever—have fluctuated, but 1941 was a bad year for the first three of them Deaths from tuberculosis show a disquieting rise for example, among children under 10 years in 1941 deaths from all forms of tuberculosis were 45% in excess of those in 1939, among children under 5 years old death from tuberculosis of the respiratory tract had nearly doubled This increase, which may well have been exceeded during the past six months, is due to a variety of factors, including the use of unboiled milk in country districts, but it seems likely that reduced resistance from dietetic deficiencies also played an important part

A survey reported on p 32 has demonstrated a drop, as compared with prewar groups, in the average hæmoglobin levels of school-children and has shown a very high incidence of anæmia among children under 2 years, particularly in day and residential nurseries Anæmia at preschool ages could and should be successfully tackled by iron administration Whether anæmia at school age is widespread in all parts of this country, whether or not it is a conditioned deficiency and its response to iron treatment have all yet to be determined WIDDOWSON and MCCANCE's work [7] indicates that the use of wheatmeal instead of white bread will not increase the iron available for hæmoglobin building and may even diminish it In Germany it appears that large-scale administration of vitamin C to school-children has improved growth and resistance in infection [8] Whether vitamin-C deficiency has retarded the growth of British children is not known, but the intake is almost certainly below the optimal [9] The wide use of ascorbic acid for infants before the Government issue of fruit juice may well have saved us a crop of infantile scurvy No figures apparently exist concerning the incidence of rickets last winter, but both doctors and mothers have doubted the adequacy of the official dosage of "cod liver oil compound" for children under 6 months, and many infant welfare medical officers have supplemented the dose There need be no shortage of vitamin D, and it is to be hoped that the official prophylactic dose for the first year of life will be increased before next winter

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[1] *Proc R Soc Med* 1941, 25, 273

[2] Ebbs J H, Tisdall F F and Scott W A *J Nutrit* 1941 22, 5

[3] Statistisches Jahrbuch für das Deutsche Reich, 1921–22, Berlin

[4] Milligan E H M and Lewis Fanning, E *Med Offr*, 1942, 67, 77

[5] *Lancet*, 1942, i 239

[6] Stocks, P *Ibid*, 1942, i, 189, and *Brit med J* 1942 i, 789

[7] Widdowson E M and McCance, R A *Ibid* p 588

[8] *Bull War Med* 1941, 2, 1

[9] Harris, L J *Lancet*, 1942, i, 642

The diet of children today is probably better than last winter as a result of better distribution of milk, more school meals, and the system of priorities in eggs and oranges It is useless to hope for an optimum diet in war-time, but further improvements should be possible for children Some subjects still needing consideration by those controlling food policy are additional provision for adolescents for whom neither school milk nor school meals are available, provision of adequate vitamin C for children from school age onwards, of adequate vitamin D for babies under 6 months, and of iron for infants and preschool children When minerals or vitamins can be supplied in sufficient quantity in natural foodstuffs these should be utilised, but preconceived ideas of what is natural should not stand in the way of the full use of laboratory products when necessary Compared with millions on the continent of Europe children in Great Britain are excellently fed, but that should not blind us to defects in their diet or to the need for constant vigilance to remedy every defect we can The Ministry of Food has earned merited praise as a business organisation, but only history will show whether it has made wise use of this great opportunity to preserve and promote the health of our people

TOTAL VERSUS SUBTOTAL HYSTERECTOMY

Once more the challenge has been flung down by the totalitarians, championed this time by no less a transatlantic authority than Counseller, and no doubt the moderates will rally to the call If a hysterectomy is to be performed for some benign pathological condition, should it be subtotal or total ? McKinnon and Counseller[1] have tried to assess the relative advantages and disadvantages of the two procedures from the case-records of 2684 hysterectomies performed at the Mayo Clinic between 1935 and 1939 This is a formidable array of material, large enough to reduce the statistical error to a minimum Being the work of expert surgeons under ideal conditions it has an added uniformity which lends force to any conclusions drawn Of these hysterectomies, 1920 included the cervix, 764 did not To eliminate the incidental physical hazards of individual cases the whole series was subdivided into two grades—good and bad operative risks—so that in the group of good surgical material the type of operation was the only known variable In this class were segregated 1497 patients, of which 1034 underwent total and 463 subtotal hysterectomy

The arguments that favour the total operation can be epitomised as follows The cervix is eliminated as a possible source of subsequent malignant change This risk has been computed at 2% to 8% by various authors,[2] and it is a particularly real one if the cervix is already diseased by erosion and infection at the time of operation In such a cervix subsequent cauterisation is neither an efficient nor a method of eliminating the risks of carcinoma moderate point of view has always refused to that an organ, merely because it is a candidate f malignant change, should be ablated as a sort long-term insurance , but where an organ is already known to be predisposed to malignant change by chronic inflammatory disease it is reasonable to extend the scope of operation to include that danger zone, i it can be done without subjecting the patient to a mischievous risk Most surgeons now agree that all cervices that are in any way pathological should be removed with the body of the uterus if the condition of the latter is the primary indication for operation. The next argument in favour of the total operation i that the cervix as a focus of infection is removed. Certain forms of urinary infection, notably trigonitis and certain types of cystitis, have their origin in an infected cervix , the cervix is also sometimes the primary focus in certain classes of iritis Apart from these considerations, it is a painful disappointment for a woman, having undergone subtotal hysterectomy, to be left with a persistent leucorrhœa that may only be cured ultimately by the vaginal removal of the cervical stump Occasionally these stumps bleed slightly under hormonal influence if a portion endometrium is retained above the cervix, and vascular erosions also cause inconvenience and worry to the patient and her doctor by reason of a bloodstained discharge That the total operation provides a more stable vaginal vault is anatomically evident After a subtotal hysterectomy the cervix is left suspended only by such parts of Mackenrodt's ligament as the surgeon has seen fit to leave and it is liable on rare occasions to prolapse After the total operation the vaginal vault can be united by sewing both cervical ligaments together in the centre This technique minimises the risk of vault prolapse considerably In McKinnon and Counseller's series, after the total operation there was only one case of vault prolapse , after subtotal operations 23 had to have a subsequent plastic operation for this complication in the same five-year period Pulmonary complications, such as embolus, were commoner after subtotal than total hysterectomy, which McKinnon and Counseller attribute to infection of the stagnant blood vessels in the broad ligament The last point—and one not generally accepted in this country—is that in the Mayo Clinic series the mortality was lower for the total operation, being 0 78% for the total and 1 04% for the subtotal operation in the whole series, and in the cases of least surgical risk 0 18% for the total and 0 86% for the subtotal operation

In favour of subtotal hysterectomy it can be said that it is followed by a smoother convalescence with less reaction such as postoperative fever and there i less chance of urinary infection After the tota operation, in which the bladder has been traumatise by dissection from the anterior aspect of the cervix functional retention of urine is a commoner complication This in itself predisposes to urinary infection which in turn is aggravated by the number of catheterisations that may be necessary Secondary hæmorrhage from the cut edges of the vaginal vault and th descending branches of the uterine artery is anothe complication of total hysterectomy, and in 8 of th 1920 total hysterectomies in this [illegible] his complica

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1 McKinnon, D A and Counseller, V S *Surg Gynec Obstet* 1942, 74, 957
2 Black, M F *Ibid*, 1939, 68, 898

tion needed treatment Finally for all infected cases the subtotal operation carries a smaller risk of peritonitis supervening The conclusions that McKINNON and COUNSELLER arrive at are these The elimination of the cervix as a source of subsequent trouble and the lower immediate mortality-rate of the total operation far outweigh the risks of any complication that may arise after total hysterectomy Except in cases already infected at the time of operation total hysterectomy is the operation of choice where a surgeon is called on to remove the body of the uterus for benign conditions The increased risk of secondary hæmorrhage from the vaginal vault, and the increased risk of urinary complications following total hysterectomy, can be minimised by operative technique and a careful postoperative regime The fact that the Mayo Clinic is performing 2½ times as many total operations as subtotal indicates the trend of modern American thought

CHEMOTHERAPY IN BIOCHEMICAL TERMS

THEORIES of sulphonamide action have exhibited the familiar biological process of recapitulation and advance The questions which have been asked of most chemotherapeutic drugs during the past fifty years have now been answered with certainty for these new ones—sulphanilamide does act directly on the parasite and not, for example, by stimulating the defences of the host, it does act itself, and not by conversion to more active compounds[1] But hitherto it has been difficult to describe the mode of action of the sulphonamides in greater detail Localisation of their action in particular parts of a parasite, or description of their effects in terms of specific pharmacoynamic action, have not been of much practical use r fruitful in the production of new drugs Correlaion of action with chemical or physical properties ias been satisfactory in limited fields only There vas a gap in our knowledge other unknown factors vere more important in conditioning drug activity Che receptor theory as originally propounded connected drug action with vital processess of the cell, such as respiration These connexions were forgotten One of the contributions made to medicine by sulphanilamide has been in stimulating the biochemist's interest in drug action when he had become preoccupied with enzyme chemistry and nutrition It seems obvious now that the primary action of chemotherapeutic substances must be biochemical, this science has long been concerned with the action of inhibitors on living processes- Yet chemotherapy has been behind pharmacology in receiving biochemical interpretation The explanation of eserine activity as due to inhibition of choline esterase came 14 years before the description of sulphanilamide action in terms of competitive inhibition of enzymes acting on p aminobenzoic acid This may be because more pharmacologists than chemists are taught biochemistry, or because sulphanilamide, an eminently suitable subject, has only recently been available

The simplicity of the structural relation between sulphanilamide and *p*-aminobenzoic acid has attracted much attention, but the picture is not complete without further refinements, which again can be given satisfactorily only in biochemical terms Sulphanilamide inhibition depends primarily on limiting the organism's use of *p*-aminobenzoic acid, the inhibition of yeasts,[2] of the dermatophyte *Trichophyton purpureum*[3] as well as of the earlier investigated bacteria can be removed by *p*-aminobenzoic acid These findings are from nutritional experiments, and it has been important to demonstrate that the anti-sulphanilamide effect of *p*-aminobenzoic acid is a specific one, and not a general growth-stimulation, this point has recently been confirmed[1,4] The anti-sulphanilamide activity of *p*-aminobenzoic acid is however also shown by other, structurally unrelated, compounds,[5] notably, in the case of *Bacterium coli*, by methionine and certain purines The effects of these compounds are not so general as that of *p*-aminobenzoic acid, and they are pictured by KOHN and HARRIS as being biochemically related to *p*-aminobenzoic acid, for example, the acid may be necessary for the formation of the compounds, while they are necessary for growth of the organism The existence of anti-sulphanilamide compounds explains how media may be obtained in which the action of sulphanilamide is less than it is in vivo the medium has only to contain the greater amount of antagonistic materials Such inability to reproduce in vitro the in-vivo action of sulphanilamide once led to the incorrect belief that its action must be indirect, for example on the toxins of the invading organism. The recent restatement in Switzerland[6] of this rejected theory is only evidence of the present isolation of scientific work.

BONE MECHANICS

SINCE the pioneer researches of Meyer, Wolff and Culmann, the essential features of bone mechanics have become textbook knowledge In brief, a bone is built as an engineer would build it if he had sufficient finesse The thickness of a long bone down its length is, for example, proportional to its "bending moments", and internally its trabecular structure (like the Forth Bridge or the Cologne spires) offers a faithful picture of the stresses and strains to which it is subjected Moreover bone can readjust its "stress diagram" when for surgical or other reasons the forces acting on it are changed How does all this come about? The fundamental fact underlying the response of bone to tension and compression is that osteoblasts, like other fibroblasts,[7] can orientate themselves under stress—a fact which has been described as the "physiological foundation of bone surgery"[8] Glucksmann[9] has now studied the effect of mechanical stresses on skeletal tissue in vitro, and he finds that its response is a direct one, the complicating effects of muscle, nerve and arterial supply are wholly eliminated Furthermore, tension stresses stimulate bone formation—a fact which the orthopædic surgeon has already placed on a firm though empirical footing Glucksmann's research rounds off a long history of the study of bone mechanics on a physiological level The need now is for an extension of the elementary physiology of stress to the surgery of nerve and skin In the case of nerves a promising beginning has already been made[8]

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[1] Green, H N and Bielschowsky, F *Brit J exp Path* 1942, 23, 1 and 13

[2] Landy, M. and Dicken, D M *Nature, Lond* 1942, 149, 244

[3] Dimond, N S *Science* 1941, 94, 420

[4] Lynch, H M and Lockwood, J S *J. Immunol* 1941, 42, 435

[5] Kohn, H I and Harris, J S *J Pharmacol* 1941, 73, 343 and 383 Harris and Kohn, *J biol Chem* 1941, 141, 989, Strauss, E, Dingle, J H and Finland, M *J Immunol* 1941, 42, 313 and 331

[6] Moosbrugger, G A *Schweiz med Wschr* 1941, 71, 1556

[7] Weiss, P *J exp Zool* 1934, 68 393

[8] See *Lancet*, June 20, 1942, p 739

[9] Glucksmann, A *J. Anat* 1942, 76, 231

Annotations

CLINICAL PATHOLOGY OUTSIDE LONDON

THAT the Ministry of Health is fully alive to the importance of pathology in the Emergency Medical Service is indicated by the appearance of circular 2658, dated June 19, which sets out the plans of the ministry *in regard to hospital* or "*clinical*" *pathology in the* provinces This work has up to now been done in a variety of laboratories of which the principal have been those of the voluntary hospitals Facilities vary greatly from area to area but few places have been out of the reach of a service of some sort Although not satisfactory the state of affairs has apparently not so far been judged urgent enough to call for the vigorous measures which in the autumn of 1939 led to the establishment under the Emergency Public Health Laboratory Service of fully equipped and staffed laboratories throughout the country This was an emergency measure and subsequent modification was inevitable In the case of clinical pathology it has fortunately proved possible to move more gradually This branch of pathology was first dealt with in the London area by organising the EMS hospital pathological service on the sector basis each centring on a great teaching hospital It is now proposed to do something of the same sort outside London The ministry will recognise certain laboratories throughout the provinces as "area" laboratories, it is implied that they will be attached to hospitals These area laboratories will do the work for the hospitals in which they are situated and also for other hospitals in their area, they will also undertake work for practitioners In smaller hospitals there will be "side room laboratories," not under the immediate and continuous supervision of a medically qualified pathologist The ministry will assist in the provision of staff, equipment and even in exceptional cases of buildings, appointments of medical staff will be made in consultation with the authorities of the hospital concerned In return the area laboratories will undertake without further payment work for patients for whom the EMS accepts financial responsibility For work coming from other hospitals the area laboratory will charge 3s per specimen, fees for work done for practitioners will be charged on a schedule based on that of the BMA The fees for all this outside work will be credited to the ministry This is likely to raise some argument in the case of laboratories whose pathologists have been receiving a proportion of these fees as a part of their emolument, but an acceptable adjustment should not prove impossible The grouping of laboratories will be arranged by the hospital officer in consultation with the honorary consultant in pathology where one is appointed This consultant officer, it is suggested, shall be a member of the staff of a university pathological department Considering that the clinical pathological service of many provincial non teaching hospitals has been developed and integrated with the clinical service to a degree at least as high as in the university hospitals this condition of appointment seems somewhat invidious On the whole the circular represents a definite step towards a national service in clinical pathology, and it is good to see that, in line with the recommendations of the BMA Medical Planning Commission and the Nuffield Trust for Provincial Hospitals, it recognises by implication that clinical pathology must be practised in laboratories attached to the hospitals Some of its recommendations will raise issues with established interests both in the voluntary hospitals and among clinical pathologists outside them, but fortunately the policy is sufficiently wide to permit of variations to suit local circumstances The circular makes no mention of the need for a pathological service within the National Health Insurance system, but the establishment of area laboratories will help to make strait the way for this essential step the time comes to take it

A NEW VIRUS DISEASE

THE number of new viruses discovered in human and animal diseases grows steadily and Paul Durand[1] added to the list one isolated from himself in Tunis 1939 The symptoms of his illness were in no *specific or remarkable, consisting chiefly of* anorexia, constipation and insomnia, and a temperature of 100 6° to 103 8° F lasting 11 days The blood picture was not abnormal and blood cultures were sterile Agglutination tests with typhoid and paratyphoid organisms were negative, as was the Weil Felix reaction Venous blood taken on the second day of fever caused a febrile reaction when inoculated into guineapigs and the virus has been maintained by passage of infected guineapig spleen Practically the same symptoms appeared in two people inoculated with infected guineapig spleen and in the case of a laboratory infection described by Findlay[2] In one of the men inoculated with infected guineapig spleen the virus was found in the blood from the 4th to 21st days, in the urine from the 5th to 17th days, and in one sample of cerebrospinal fluid taken on the 6th day The rhesus monkey, dog, Syrian hamster, merion, white rat and mouse are all susceptible to a varying degree when inoculated by the intradermal, intranasal and intracerebral routes Findlay, using the original strain of virus, has shown that the virus grows in suspended cell cultures of chick embryo tissue and tyrode solution and in the developing chick embryo Durand has found it to have remarkable resistance to various chemical agents It is unaffected by the action of bile for 213 days at 4° C, and is reduced in virulence but not inactivated by contact for 18 hours with 1% phenol or formol The virus remained active at least 213 days at 4° C and when preserved in 50% glycerin in saline was active after 18 hours at 37° C Filtration through gradocol membranes indicated its size to be between 38 and 52 mμ The virus has not been found to be related immunologically to any of the present known viruses, though Durand emphasises the similarity of it behaviour in animals to that of lymphocytic choriomeningitis Whether this virus occurs in areas other than Tunis is a question that will probably have to be postponed for a few years now, till more is known about it, it seems fitting that the virus should be called after its discoverer

INORGANIC AND ORGANIC IRON

Bunge probably thought he had settled the question for all time when in 1885 he made the pronouncement that iron in organic combination was of more value in nutrition than its inorganic salts He must have known of course, that inorganic iron had been a therapeutic mainstay for years, for Blaud had introduced his famou pill in 1831,[3] but Bunge[4] considered that his own result justified the change of opinion In 1933, the subject was again explored by Elvehjem and two of his collaborators[5] They measured chemically the inorganic iron in a number of foodstuffs, and compared it in two instances with the quantities of iron in the same foods which were available for hæmoglobin regeneration anæmic rats They concluded that the inorganic i and the available iron were one and the same, and substantiated this by showing that the iron organically combined in hæmatin and similar substances was of no use to the growing rat The introduction of the idea that only the inorganic iron in foodstuffs was available, and that this availability could be measured by ch

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1 Durand, P *Arch Inst, Pasteur Tunis* 1940 29 1
2 Findlay, G M *Trans R Soc Med Hyg* 1942 35 303
3 See Shohl, W C Mineral Metabolism New York, 1939
4 Bunge, G *Z physiol Chem* 1885 9, 49
5 Elvehjem, C A, Hart, E B and Sherman, W C *J biol Che* 1933, 103, 61

thods, stimulated a deal of work at Wisconsin and ewhere which was not very concordant or satisfactory. vertheless, the basic generalisation was accepted by st people as a working hypothesis.[6] Just as opinion s showing signs of settling down, Oldham, Schultz d Morse[7] reported very careful work on a single baby uch went to show that the hæmoglobin iron in meat s as useful to the child as inorganic iron but that the n in a wheat-germ preparation, although undoubtedly organic, was much less readily absorbed. Oldham,[8] oreover, went on to show that the organic iron in cooked meat was as truly unavailable to rats as it d always been thought to be, but that some change ok place when it was heated which allowed the animal make use of it. These later findings explained how her investigators had come to consider hæmoglobin d hæmatin iron unavailable, but Oldham's results readeagled all the work which had been done on the sumption that only inorganic iron was likely to be ailable in human nutrition, and two papers have ppeared in the last few weeks which have again conunded the whole issue. Widdowson and McCance[9] ave shown that there may be something in brown bread hich prevents the absorption of dietary iron and have ggested that the interfering substance may be phytic cid. Furthermore, Black and Powell[10] have demontrated that even uncooked and untreated hæmoglobin on may be absorbed and utilised by normal and næmic persons. Their subjects were given a litre of lood by duodenal tube and absorbed 10–25% of the on so administered. This piece of work would have een still more valuable if the same patients could have een given an equal quantity of inorganic iron, and the mounts absorbed compared; this remains to be done. here can be no doubt today that inorganic iron is bsorbed when given in therapeutic doses. Some time n the tomorrows investigators will clarify the position bout iron in food and show us wherein lies the truth. leanwhile, for purposes of practical, everyday British-Restaurant nutrition it looks as though we must go ack to the good old days when the iron in a diet neant the total iron in it, and all one could do was to neasure it and base one's assumptions of intakes and equirements on that figure.

PREGNANCY AND DIABETES

BEFORE the discovery of insulin pregnancy in a diabetic woman was a rare occurrence and highly dangerous to mother and child. Insulin has reduced the maternal fatality in diabetics from 30–40% to about 2%, but the fœtal fatality still remains in the neighbourhood of 40%. Three factors must be borne in mind when pregnancy for a diabetic mother is considered: effect on the mother; chances of obtaining a live child; and possible inheritance of the disorder. Lawrence and Oakley[11] and Fouracre Barns[12] believe there is no sufficient evidence that pregnancy increases the ultimate severity of the diabetes. Most diabetics require a slightly increased insulin dosage during pregnancy especially during the last third, and the control of the disease is made more difficult by the lowered renal threshold for glucose and consequent wastage of carbohydrates and increased chance of ketosis. In 25 diabetic pregnancies observed at University College Hospital Barns found an incidence for toxæmia of late pregnancy of 46% and for pre-eclamptic toxæmia of 29%, compared with an incidence in 1864 consecutive non-diabetic pregnancies of 36% for toxæmia of late pregnancy and 27% for pre-eclamptic toxæmia. His high incidence is accounted for by the inclusion in the toxæmic group of any woman with a BP over 130/70 mm Hg. Priscilla White and her collaborators in Boston, whom he quotes, found eclampsia to be 50 times as common in diabetics as in normal pregnant women. Lawrence and Oakley stress the difficulty of diagnosing toxæmia in diabetic pregnancy. Their figures for the incidence of toxæmia in their series are vitiated by the absence of blood-pressure readings in many of the cases. Most workers would agree with Mengert and Laughlin[13] that the incidence of toxæmia is about 3 times as great in diabetics as in normal women.

Fœtal mortality-rates are given as 37% by Lawrence and Oakley and 44% by Barns, figures comparable with Joslin's pre-insulin rate of 44%. Four reasons are cited to explain these high rates: inadequate control of diabetes leading to hyperglycæmia or hypoglycæmia in either mother or child, toxæmia, asphyxia, and congenital abnormalities. Joslin[14] records congenital abnormalities in 8% of cases, Lawrence and Oakley found 2 examples in 54 cases, and Barns 3 in 25. The incidence of asphyxia is closely related to the mechanism of parturition, the age of the mother at the onset of pregnancy, and the size and viability of the fœtus. About a quarter of all cases of diabetes in women begin during the childbearing period, and 60% of these begin after the age of 30. In Barns's series the average age of diabetic primigravidæ was 33 years. Moreover, in diabetic mothers the fœtus is often large. Lawrence and Oakley report 27 out of 45 live babies with a birth weight exceeding 9 lb, and 23 of them were delivered by cæsarean section between the 36th and the 38th week of pregnancy. Abnormal carbohydrate metabolism is said to be responsible for these excessively large fœtuses. Lawrence and Oakley found that the average weight of babies spontaneously delivered in mothers with completely controlled diabetes was just under 7 lb, compared with an average weight of just over 10 lb in mothers with uncontrolled diabetes. Diabetes control is not the only factor determining size, however; they found that babies of diabetic mothers delivered at the 36–38th week by cæsarean section showed maturity in excess of normal more often than could be explained by an error in menstrual dates. Thus the infant of a diabetic seems to mature abnormally, and White attributes this to hormonal influences. Following up the work of Smith and Smith[15] on the relationship of blood prolan to the onset of toxæmia he has reduced the fœtal mortality in a recent series of diabetic pregnancies to 6% by substitution therapy with prolan and œstrone.[16] The previous best figure with equally adequate diabetes control (from the Boston group) was 32% fœtal mortality. It seems therefore that the early diagnosis and treatment of toxæmia offers the main hope of reducing the high mortality-rate in diabetic pregnancy.

The inheritance of diabetes is still unproven, and the view of Pincus and White[17] that it is inherited as a mendelian recessive is not accepted by all; but the hereditary trend exists, and must be considered when discussing the question of pregnancy with a diabetic patient. The prime factor to be considered must be the social one, the desire for a child in the family; the next essential is full coöperation of the patient. The added risk, the liability to fluctuations in diabetic control, the danger of toxæmia and of fœtal death, the

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6 McCance R A *Chem & Ind* 1939 58 528
7 Oldham H A Schultz F W and Morse, M *Amer J Dis Child* 1937 54 252
8 *J Nutrit* 1941 22, 528
9 Widdowson E M and McCance R A *Lancet*, 1942 1 588
10 Black D A K and Powell, J F *Biochem J* 1942 36 110
11 Lawrence R D and Oakley, W *Quart J Med* 1942, 2, 45
12 Barns, H H F *J Obstet Gynæc* 1941, 48, 707
13 Mengert W F and Laughlin, K A *Surg Gynec Obstet* 1939, 49 615
14 Joslin E P et al Treatment of Diabetes Mellitus 7th ed Philadelphia and London 1940, p 693
15 Smith G van S and Smith O W *Surg Gynec Obstet* 1935 61 27 and 175
16 White P Titus, R S Joslin E P and Hunt H *Amer J med Sci* 1939 198 482
17 Pincus, G and White, P *Amer J med Sci* 1933, 186, 1

possible need for delivery by cæsarean section must all be explained With careful supervision by physician and obstetrician, attendance at least once a month for the first 6 months, and thereafter weekly, treatment of any sign of toxæmia, and cæsarean delivery between the 36th and 38th week, it is possible nowadays to offer the diabetic woman the chance of a live child with little more than double the risk of normal pregnancy

MULTIFORM RESEARCH

THE report of the governing body of the Lister Institute of Preventive Medicine, dated June 26, 1942, is full of meat Trade has been good, for the sales of sera, vaccines, &c increased during the year by £19,300 to £74,700 and far more than covered the whole expenditure But this passes almost unnoticed in a record of research, undaunted by circumstance, carried on by the three divisions of the institute scattered over the country Workers at Cambridge, Maidstone and Oxford may miss their library and their accustomed desks at Chelsea Bridge Road but the hospitality which they have enjoyed has been as stimulating to guests as to hosts The curator of the National Collection of Type Cultures has even been sharing quarters with his opposite number in the USA From the potted material in ten closely printed quarto pages only the all round expert would extract a complete diet, but even the general reader will find much food for thought Some of the more mature work has been published in 25 papers which have appeared in special journals and been abstracted briefly in our columns Their authors' names are household words in many lands The Vi antibody has been justifying its existence by proving as useful in detecting paratyphoid carriers as it has shown itself in the pursuit of outbreaks of typhoid fever, its practical value being enhanced by the fact that the Vi agglutination reaction is independent of the intermittency of bacillary excretion Some of the Vi phages have even been trained to develop strain specificity A serological test is proving useful for spotting *Trichomonas fœtus* infection in cattle Certain specific blood group haptens have been isolated from human saliva The *Clostridium welchii* has been shown to produce an enzyme which, like certain snake venoms, can break down lecithin The skin of fat starved rats is known to become thickened—mitosis in the epithelium is many times as great in them as in normal animals this research has thrown further light on the metabolism of linseed oil Human serum and plasma have been dried by a new process of freezing on a metal coil which is then dried in vacuo A method of removing lipoids from plasma by freezing with ether seems also to remove fibrin and may reduce the troubles of post filtration clotting There is some likelihood that hyaluronic acid contains preformed ring structures Work on hormones in rats confirms Minot's suspicion that the process of ageing starts very early, even indeed from birth , the diminution of the size of the nucleus in proportion to the containing cell also points in the same direction Vitamin standardisation is being pursued and a table compiled of the vitamin value of each of the common foods both for big agricultural programmes and dietary surveys The biological value of the proteins in various flours is being examined the loss due to lower digestibility in the higher extraction flours is more than compensated, it seems, by the higher value of their proteins A survey of potatoes shows great differences in total nitrogen content , but however high the content young rats will not flourish on this alone without a supplement of casein Nor can potatoes be substituted for barley in the diet of growing pigs without much added protein concentrate Dried brewers' yeast is as beneficial to pigs as is casein in supplementing cereal protein Household scraps are disappointing for obtaining live weight gain in pigs A biscuit daily containing 10 g of cultivated dried yeast has caused elementary school-children in Oxfordshire to put on w A dose of ascorbic acid 100 mg at intervals of se days or even weeks seems likely to offer additional tection against scurvy during the winter period report ends with an appreciation of the devoted coö tion of the director, Sir John Ledingham, and all mem of the staff under difficult conditions

THE FRACTURED SCAPHOID

THE diagnosis and treatment of fractures of carpal scaphoid in relation to Service conditions are summarised in the *Army Medical Directorate Bulletin* May This injury appears to be on the increase—it a not uncommon back-fire fracture—and the misdiagnosis of sprained wrist should become less frequent it is realised that a simple sprain in a young man is less likely than a scaphoid fracture It is important also to remember that the ordinary anteroposterior and lateral radiograms often fail to reveal a crack which is obvious in an oblique view, and that radiographic evidence may not be found in some cases until a few weeks have elapsed Early diagnosis is of cardinal importance in influencing results , the only problems are those arising from late recognition The recent case will unite with adequate plaster fixation (which includes the first metacarpal) until radiograms are satisfactory , there is no arbitrary period of fixation, and individual cases vary a good in the time required for union When the fracture first seen after 4–6 weeks, bone grafting by closed technique is recommended The Army authorities thus recognise that, while these late cases will often unite in plaster, the period of fixation may have to be very long It was to accelerate healing in these cases that Armstrong devised the operation, which has found considerable application in the Royal Air Force, where rapid rehabilitation of skilled personnel is of the greatest importance The operation, however, is not for casual performance; it must be carried out under strict radiographic control through a small incision over the scaphoid tubercle by a surgeon who has mastered the exacting technique A not uncommon problem arises when a wrist, perhaps recognised as always a little weak, is stirred up by trauma and an old fracture is discovered To treat this by immobilisation or grafting is not advisable under Service conditions , support and physiotherapy and an early return to duty are rather to be aimed at When an old fracture is associated with radiocarpal arthritis the bulletin recommends a similar line of treatment in mild cases , severe changes will require arthrodesis of the wrist, but this operation is hardly indicated for the serving soldier unless he is a key man When there is, at any stage, avascular necrosis the excision of a small proximal necrotic fragment gives a useful painless wrist, but excision of the whole bone has not been found to render a man fit for service again This bulletin, while it does not bring out anything essentially new, does emphasise two important findings—that neglect or misdiagnosis of what is still too often regarded as a trivial injury may lead to months of disability and uselessness , and that bone grafting in selected cases is of the greatest value in securing a rapid return to full function

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1 Armstrong, J R *Lancet*, 1941, i, 537

Dr T Pearse Williams has gleaned the following from an essay on education by Oliver Goldsmith in *The Bee*, a weekly pamphlet, dated Nov 10, 1759

"No luxurious dishes with high seasoning, nothing given children to force an appetite, as little sugared or salted provisions as possible, though never so pleasing , but milk, morning and night, should be their constant food This diet would make them more healthy than any of those slops that are usually cooked by the mistress of a boarding-school , besides it corrects any consumptive habits, not unfrequently found amongst the children of city parents

CHOOL MEDICAL SERVICE IN WAR-TIME *

J ALISON GLOVER, C B E, M D CAMB, F R C P

IN the evacuation areas the school medical service was tirely suspended for some time after the first evacua- on Medical officers were in hospitals or aid-posts, urses had left in charge of special parties or as maternity urses or had gone to casualty hospitals, two-thirds f the schools had been taken for civil defence and the ther third were closed, nearly all teachers and every vailable social worker had gone with the evacuated hildren But only half or less of the children had left, he other half were still in the evacuation areas, having o school, no school meals or milk, and no medical ervice Moreover, there was a fear that to continue hese services in the evacuation areas would be to ncourage the return of children to them

THE CHILD WHO STAYED AT HOME

By November, 1939, conditions in the reception areas aving greatly improved, attention became focused on he large number of children left in or returned to the vacuation areas, whose condition—without schooling, neals, milk, or medical service—was deteriorating The Board of Education urged that the medical services hould be provided again and suggested, among other neans to cleanliness, that the excellent shower baths provided for gas decontamination, should be utilised Dr W S Booth, of Holland, Lincolnshire, had been the first to put them to this use Later mobile tented hower baths units were provided and staffed by Messrs Lever Brothers in the London area

Schooling was provided in successive stages first by "home circles" then, as shelters were provided and schools reopened, for children over 11, then for juniors, finally it was made compulsory for all children The children thus returning successively to school were medically examined There were some 180,000 children in London at the end of 1939, and by the withdrawal of the school medical and nursing staffs from the hospital service a school medical service was recommenced, 38 out of the original 80 treatment centres being reopened In the first 3 months of 1940, parents were invited by postcard to present their children for medical inspection and 58,000 children were thus inspected as well as 37,000 as the emergency schools reopened Cleansing, medical and dental treatment, and the provision of meals and milk began again Though there was some deterioration in cleanliness, health and nutrition, it was much less than might have been anticipated

From April to July, 1940, attention had to be concentrated on the children registered to take part in the second great evacuation scheme restricted to school-children and announced in February, 1940, this formed for months the main work of the school medical service, providing as it did for the registration, medical inspection, labelling, cleansing and keeping clean, and necessary treatment by the evacuation authorities of half the 1,100,000 children remaining in the evacuation areas At the same time the reception authorities were to arrange a further rapid medical examination on arrival, and were to prepare hostels for 2% of the total number allotted to their areas Parents were asked to register their children for it before the end of March, on the understanding that the children would not be sent away until bombing had begun, that they would go with their school parties, and that they would stay in the reception areas until the school party returned Only 239,000 children however, had been registered by June, and the fall of the Low Countries and France led to many changes On May 19, 1940, 34,000 London children who had been taken in the first evacuation to the East and South East coasts were transferred to South Wales, and a week later the local children from towns on those coasts most likely to be invaded were offered evacuation

Slight bombing began in May and 138,200 registered children had been sent out by July The real storm broke in September, 1940, a year later than had been expected, and evacuation was again opened to mothers with young children Children were evacuated in parties daily and later three times a week The tendency to drift back continued in ceaseless ebb and flow according to the persistence, fury or intermission of attack and greatly added to the difficulties of the service, as of all educational activities alike in evacuation and reception areas The number of children " remaining " in London varied from 262,000 after the first evacuation in September, 1939, to less than 85,000 in September, 1940, while on Jan 24, 1942, it was 166,900, and on March 7 180,600 The rate of return is still rapid, sometimes 2000 a week East Ham in peace-time has a normal roll of some 15,000 children, the numbers on the roll in 1940 varied between 9000 and 1500

In all evacuations after the first children had been carefully prepared and inspected before transfer, and complaints are now almost unheard, showing how well the school medical service has recovered from its initial shock, and how much was learned from the experience of the first evacuation The transfers entailed an immense amount of work accentuated in June, 1940 by the urgent demand for examination and treatment of some 17 000 children whose parents wished to take advantage of the scheme for sending children overseas Although a very small percentage of these children had gone overseas before the scheme had to be abandoned, these special examinations and treatment were by no means wasted The long remission of bombing since May, 1941, has enabled the service in the evacuation areas to return almost to normal

SCHOOL MEALS AND MILK

The provision of school meals and milk is one of the special services for which the medical branch of the Board of Education is responsible During the early part of the last war school feeding, especially in London, was extensive Soon, however, it rapidly declined both in London and the country generally probably owing to separation allowances and the current high wages In the present war, the pattern was reversed Evacuation caused a falling off, because feeding centres where the free meals were given were nearly all in evacuation areas and were closed Later, however, there was a great increase, mainly of meals on payment, and owing to the forward policy of the board and the Ministry of Food and the great demand for female labour this increase has been rapid Just before the war about 177,000 elementary children were having solid meals free, and probably about 50,000 on payment On a single day at the end of February, 1942, 448,500 elementary school-children took dinner at school, and 162,500 secondary school-children Thus in England and Wales some 611 000 school-children were having dinners in school, and, at the present rate of development, the number should be a million by September, 1942

As long ago as 1915 London set up a minimum value of 750 calories for the school dinner, which was also to have a minimum protein content of 25 g, two-thirds of it to be first class Minima have a knack of becoming standards, and these minima came to be regarded as standards for elementary school dinners throughout the country—standards moreover, which outside London were generally not attained Thus the prewar standard was largely unsatisfactory and the effect of rationing was to force school canteens to accept even lower standards Since the autumn of 1941 when the new scale of allowances for school canteens was adopted, however, improvement has been rapid

In November, 1941, the Board set up a new standard, this had an energy value of 1000 calories instead of 750, a first-class protein content of 20–25 g, instead of 16 6 g, and a fat minimum of 30 g The reasons for this advance in the midst of food restrictions are, first, that the average daily energy value of the food required by a healthy child of elementary school age is about 2500 calories, and secondly that the midday dinner which is for most children the main meal of the day should provide a good deal more than a third of the necessary calorie value, most of the necessary vitamins and minerals, and plenty of fat and first-class protein To reach this standard of first-class protein and to get enough calcium while keeping the charge within the *4d* or *5d* of the usual cost of the food, the 1 oz of dried milk allowed daily must be used for cooking, this valuable addition affords 11 g of first-class protein, 270 mg of calcium, 3 g of fat and has an energy value of 115 calories The Ministry of Food makes other valuable concessions to school canteens

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* Extracts from a Chadwick lecture delivered on May 12, at the Royal Society of Tropical Medicine, London

Bulk cooking and vitamin-C preservation go ill together, as Dr S W Swindells has pointed out, and one of the difficult problems of the school canteen, especially in winter, is to supply adequate dosage of vitamin C Chopped raw vegetables added to each plate of the first course is a solution but demands a good deal of labour and some education of the children Many children still have to bring their own dinners to school, and the inadequacy of these lunches, so often exposed in peace-time, has been greatly accentuated by rationing, since almost every usual constituent of the sandwiches (meat, eggs, cheese, jam and butter) is rationed It is to be hoped that two of the good results of the war will be the inclusion of the school dinner as an essential part of the school curriculum, and the provision of school milk for every child

The milk in schools scheme received a great impetus from the rationing of milk as well as from intensive propaganda At the end of February, 1942, 3,113,000 children in elementary schools were taking milk under the milk in schools scheme, and of these nearly quarter of a million were having two-thirds of a pint daily, so that whereas in 1938–39 some 55 6% of all elementary school-children were receiving milk either free (11 5%) or at a reduced price, now not less than 75% of all elementary school-children are getting a third of a pint or more a day in school, in addition to the half pint of fresh milk at the ordinary price to which they are entitled under the priority scheme The priority policy however, though it allows and encourages, does not by itself *ensure* a larger milk-supply to school-children It is, therefore, essential that all school-children should receive the extra milk provided by the milk in schools scheme In addition to the numbers in elementary schools, 275,800 children in secondary schools are receiving milk in school under the scheme

CAMP SCHOOLS

In 1939 the National Camps Corporation built 31 camps in delightfully rural surroundings, 30 of which are now occupied as residential schools Originally designed for short-stay school camps for 348 children, the standard model had 6 long dormitories with 58 children sleeping in double-tier beds, a dining-hall with kitchen, an assembly hall, two ablution blocks, a hut with three classrooms, and a hospital block with 7 beds For permanent occupation as boarding schools for 240 children over 11 years, one dormitory has been converted into class or workrooms, and the number of children in each dormitory has been reduced to 48, while the hospital beds have been increased to 11 The dining-hall, kitchen and dietary are admirable, and the health of the children during the past severe winter has been remarkably good Elementary school-children have thus been given some taste of the advantages of country and open-air, ample well-balanced meals, regular hours and adequate sleep The education of the future will owe much to the energy, foresight, and wise choice of sites of Sir Edward Howarth, and his appreciation of the importance of feeding arrangements in education The children have grown remarkably tough and have developed a pride in their health I visited one camp of 200 children after 3 weeks of severe winter weather in a high and exposed position, and found the hospital block empty, only 3 children had been admitted for trivial ailments during the previous month

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THE RHEUMATIC DISEASES —Representatives of the Empire Rheumatism Council and of the British Orthopædic Association met in London on June 30 to discuss means of cooperation in the treatment of rheumatic disease It was decided to appoint a joint standing advisory committee consisting of Lord Horder (chairman) Mr G R Girdlestone (vice chairman), Dr Hugh Burt (acting for Lieut Colonel W S C Copeman), Mr Norman Capener, Mr W A Cochrane, Squadron Leader W D Coltart, Prof L S P Davidson, Mr A G Timbrell Fisher Mr S L Higgs Brigadier F D Howitt and Prof H J Seddon Mr Capener and Sir Frank Fox will act as joint secretaries

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In England Now

A Running Commentary by Peripatetic Correspondents

WHEN W H Hudson wrote his essay on "The great dog superstition," he can scarcely have realised how great was the prejudice to which he was opposing himself, how strong the bulwarks of canine liberty If any exacting experiment has to be carried out, its proposer soon finds that dogs are sacrosanct (not to mention the felidæ and equidæ), and if frogs will not serve his purpose he must fall back on human volunteers, who share with frogs and invertebrate creatures the legal presumption that they can look after themselves The holder of a licence under 39 and 40 Vict, cap 77, may vary the constitution of an animal's diet, but not so as to prevent it from satisfying its hunger or thirst, so that experimental work on dehydration has almost of necessity to be carried out on the human species Fiat experimentum in corpore vili!

A personal experience of three days' dehydration has enabled us (*pace* A P Herbert) to "check up on" the subjective aspect of water lack, and, as generally happens, experience was at variance with some of the published accounts For instance, Byron talks of

> "The incessant fever of that arid thirst
> Which welcomes as a well the cloud that burst
> Above their naked heads"

Now, dehydration produces no febrile state, and thirst in overmastering force is experienced only after exercise of a type which would produce the desire for water in a normal person—for example, on the first day of dehydration, after the unwonted physical trauma of a sixteen mile walk, and the psychological trauma (to a waterless person) of watering a compost heap, thirst was more acute than at any later time As to the welcome predicted for a cloudburst, the reaction to rain (at any rate when dehydration is self-inflicted) is the usual ungrateful one of involuntary mild annoyance that human comfort is being subordinated to the less clamant needs of the plant kingdom Coleridge says

> "Through utter drought, all dumb we stood!
> I bit my arm, I sucked the blood,
> And cried, 'A sail! A sail!'"

and in another place

> "We could not speak, no more than if
> We had been choked with soot"

Though we have had our little difficulties with venepuncture, we have not yet been driven to biting the arm as a method of withdrawing blood, but we found that to restore moisture to the parched throat much larger amounts of fluid were required than would be likely to reward the amateur dental phlebotomist We found that when the mouth and throat became really dry there was some alteration in the voice, being choked with soot sounds worse than anything we encountered in the dehydration period Thirst was not tyrannical in its mastery of consciousness, but it was rather literally tantalising to assist at meals, where colleagues drank what appeared to be quite extravagant amounts of water coffee and tea (Why had I never noticed before how richly endowed the streets of X are with ale houses? No detour can avoid them Do the authorities ever refuse a licence?) To food one became strangely indifferent, except things like oatcakes, which foolish preliminary optimism had chosen as part of the diet, and which later aroused a passion of antagonism

The most notable subjective effect of dehydration was the almost intolerable slowing of time One felt that this business would never end—books talk and work were of little benefit Perhaps it was my share of the collective unconscious which impelled me to the cinema on two successive evenings This did help to liquidate a portion of time, though I responded poorly to questions as to what I had seen, one of the things was in luscious Technicolor, and in another almost all dialogue started with "Have a drink" After this experience of almost invincible boredom, I shall never again question the world-without-end hour, and if any poet comes to me and says "Oh, for an engine to keep back all clocks," I shall prescribe three days of dehydration, with 4 oz of oatcake t d s

If some Master Maeterlinck, looking down on our t-hill, possibly brooding on what specific name to give —"Homo sanguineus, hardly, destruens, no-o, ternans, that's better"—happens to spot our planners, will surely smile The urge for planning is interesting iat it is a non-combatant's war-liberated energy eking expression seems obvious, that the older and dentary feel it more, that the busiest by no means cape it (e g, Lloyd George, who at a critical phase in ie last war suddenly wanted to nationalise the drink ade), that it is a constructive reaction against the astes of war, all this seems certain That subcon-iously (Lord, how I hate that arrogant word which iplies one knows where in an old horse-pond the water ids and the mud begins) it is an effort to keep power the hands of the planners themselves, which threat is evoked the young planners, I have no doubt whatver Perhaps the urge to plan is an instinctive buffer gainst reaction I say "instinctive' because it is an nazing fact that all the planners seem studiously to nore the certainty, the tidal certainty, of reaction o-one would think that these same planners had lived rough another war, when a like high purpose ruled us, nd yet within a decade Ramsay MacDonald was prime inister, "conchies" crowned with laurels, war books nsaleable, valour dross They seem blind to the past nd to have very little insight Yet reaction will come ith mathematical precision, the more Cromwellian our iood now the more libidinous the Restoration Person-lly I think it will take the form of rebellion against all ate control, of increased individualism In my own ind I feel its fœtal stirring in phantasy Act 1 is illed "The Return of the Warriors," the steady grim amp of tattered men and women in procession I am anding in the crowd watching them and a helpful oliceman is explaining "Wher're they going? Why, ie meet's in Trafalgar Square and most of 'em are rawing the Whitehall coverts That savage looking it there, them with the long knives, they're the Malayan risoners whose wives have been on the public assistance 'hey're 'unting the Colonial Secretary, they are, but iost of 'em want Lord Paperwaster and Frederick 'orm-Ffiller Those are the young doctors there, raving their listening toobes " Act 2 is called The End of the Bureaucrats," and for this I have aked up some of childhood's scenery, made during a irst lesson in the village church It depicts an oriental ourtyard, and a wigged woman with a painted face vithdraws from an upper window as the warriors enter —"And he lifted up his face to the window and said, Who is on my side? who? And there looked out to him wo or three eunuchs And he said, Throw her down " don't know if there is a courtyard at the Colonial Office, out there's a beauty in Tavistock Square Act 3 has yet o be written I hope by the warriors themselves

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Recently we had a terrible terrifying questioning from he Ministry of Health which aims at obtaining informa-ion about the medical schools of the future, to deal vith this adequately would be a whole-time job of a ortnight at least Then London University has asked is to draw up schemes for the Utopia of hospitals and nedical schools and we have met three times already o express our nebulous conceptions I am for the most part a listener, having at the outset exploded violently vith the opinion that I wish we all got on a little faster vith the war and bothered less about what we are going o do when we have won it I admit that some sort of skeleton scheme is desirable, but I don't sympathise vith the game of clothing the skeleton's dry bones with ill superficial structures and then adorning it with laborate habiliments which the mistakes of the past iave encouraged us to avoid or to add In its third year of war our medical school has carried on with absolutely no alteration in the position established welve months ago We are full to capacity, many applicants have to be refused The arrangements at parent and sector hospitals have been maintained Naturally we suffer from the drain on available teachers is the Services' requirements inexorably press-gang the men of the registrar class and some of the junior members of the staff Those who are left have been working continuously with ever increasing claims on their time And they are very weary So far as examination results are a criterion we may be said to have done our job satisfactorily, but I personally am wondering all the time how much longer we can last

* * *

I realised the other day that I had been educated for over twenty years, and perhaps even longer The earliest part is a little vague now, and all that I remember is that it was at a kindergarten called Gwendon At one time or another two of its pupils were buried in a sand-tunnel they had made, thus restricting our playing area And another thing was a girl called Rosemary, with whom I was silently in love Ah, but she was lovely From that time I have been educated without ceasing, and I cannot for the life of me decide what I have learnt I passed my Anatomy and Physiology, and I can read English French, American, Latin and Greek, which must be a good show But twenty years

A lot of it too—and this certainly makes it worse—was done on scholarships At my prep school, where I was a nasty blubbing little boy, never ready enough with "ego" and "ne no fains," I early discovered I had no aptitude for games Swotting was the only occupation open to me, and I swotted If you swot it is easy to get a scholarship, especially in one of the more recondite languages I earned more for knowing Latin than I could have hoped to win by doing something useful—mining, for instance or fighting in a war This seems to me ridiculous in retrospect, but I still have a scholarship today They have even extended my period of uselessness, since I could not switch to medicine till the classics had outworn their financial benefit

Of course, I really do not feel bitterly about this at all The years have been highly delightful, I would have them again all but the last three, with the greatest of pleasure It just seems to me uneconomic and I wish, no doubt largely because the Government forbids it, I could take part in the war It seems to me, too, that there were times when I learnt much more quickly than at others, most notably in the United States There, with everyone who taught us doing some sort of research and liking it, we easily caught the fever No-one ever cut lectures if they could help it, which is a record few schools and universities over here could boast There was an excitement in learning, which there presumably ought to be Occasionally in this country it has been possible to feel that it would be much quicker to read the books instead of hearing them recited

Twenty years And it is not over yet, nor will be unless singular courtesy is shown by my examiners One thing only has reassured me recently, I found, looking through the old notes of our hospital, a student who did not know how to use exclamation marks He put them in everywhere! His report ends on one of the most excited notes imaginable Urine! Yellow! Clear! Acid! No Sugar! Albumen—Nill! I doubt if he was even educated for fifteen

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The theatre was magnificent and the lighting superb Cloth after cloth, of colours as multitudinous as those of a Connecticut autumn, draped the edges of the wound We stood well back, in order not to be noticed Everyone wore white boots The anæsthetic trolley was so ingenious that the anæsthetist not only could but actually did, read a book (A book on anæsthetics, I saw to my surprise) Everything was so quiet and neat that you could have believed yourself in heaven instruments being passed at the right time viscera popping out and popping in But suddenly my heart missed a beat A surgeon, an assistant, a registrar, an anæsthetist, a sister, six nurses, two students, thirteen in all And then I felt it steady again Of course Stupid of me The patient

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Messrs Boots now issue their brand of sulphaguanidine in 0 5 g tablets In the treatment of bacillary dysentery they recommend an initial dose of 0 1 g per kg body weight for adults or children In adults this is followed by 0 05 g per kg every four hours until there are less than 5 stools in 24 hours, and then by 0 05 g every eight hours for another 48–72 hours In adults the maintenance dosage recommended is 0 05 g per kg body weight every eight hours, continued for not less than three days after the number of stools has fallen to less than 5 in 24 hours Messrs Boots are also issuing iodoxyl (*BP*) for excretion pyelography under the name of 'Urumbrin,' in 3 c cm and 20 c cm ampoules

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS, M P

THE long-expected debate on the Ministry of Health which took place on June 30 was, politically speaking, overshadowed by the war debates of the two following days But, characteristically, the health debate was level-headed and unaffected by the currents of opposing ideas that were clashing and conflicting in smoking-room, dining-room, lobby and committee rooms of the House

Mr Ernest Brown had a good account to give to the nation Despite war, despite rationing, despite long hours of work the health of the nation was better in 1941 and the first quarter of 1942 than in the year before the war And, very significantly, not only was health better but the birth-rate in the first quarter of 1942 established a record The debate ranged over many topics—special attention was paid to tuberculosis—but there was a strong bias towards what the Minister called positive health, which is something more than preventive medicine and Mr Brown paid tribute to the work of Sir Wilson Jameson in awakening the nation's health conscience But indeed there is no field of health administration from prophylaxis against diphtheria to planning for post-war medical relief in which Sir Wilson has not done admirable work

The story of the epidemic diseases is remarkable There has been a rise in venereal disease, not as great as that of 1914–18, but there has been a fall in diphtheria and a fall in the death-rate The rise in notifications of cerebrospinal fever is balanced by a considerable fall in the death-rate Unexpectedly perhaps, there has been a decline in admissions to mental hospitals and one wonders if this is due to a passing phase or to deeper mental and physical causes Tuberculosis is to be attacked by the extension of early diagnosis by miniature radiography and a comprehensive rehabilitation policy, but the Minister admitted that treatment is handicapped by the difficulty of getting nurses South Wales has vacant beds and a waiting-list of cases needing treatment They cannot be brought together because there are not the nurses to do the job The Minister estimates that he wants another 12,000 nurses but he and the House were unwilling to obtain them by compulsory enrolment of registered women

Mr Brown's references to the future of our hospitals and the interim report of the BMA planning committee were cautiously phrased and non-committal No doubt we shall see what we shall see and the Government may, although it was not suggested, produce a scheme of their own Probably indeed the Government of the day will have to produce its plan at the end of the war, but then no-one knows what kind of Government that will be

In the debate Sir Francis Fremantle made one of the best speeches he has ever made in the House He spoke of the three shortages beds for maternity cases, beds for tuberculous cases, and personnel He urged the need for rehabilitation after sanatorium treatment for tuberculosis He also proposed that we should deal with venereal disease as we do with other diseases—take power to treat them as infectious and prevent men and women going about and infecting others "We must compel people to undergo treatment" At the end of the speech Mr Messer, well known for his hospital administration in Middlesex, said that he was almost inclined to call Sir Francis "Comrade"

A good debate, perhaps a little optimistic, but at least showing a people in excellent state to endure the more rigorous conditions and real austerity which war may yet impose upon us

Pensions for Seamen

Noble Lords added the following clause to the Pensions (Mercantile Marine) Bill on July 1

> For the removal of doubt it is hereby declared that the expression "physical injury," in the principal Act and in this Act and in the Personal Injuries (Emergency Provisions) Act 1939, includes tuberculosis and any other organic disease and the aggravation thereof

The new clause takes the place of the amendment put forward by the Earl of CORK and ORRERY, and is a tribute to his pertinacity and enthusiasm on behalf of the merchant seaman

FROM THE PRESS GALLERY

Minister's Survey of National Health

GOOD health, like peace does not make headline is war and disease which provide sensation But Minister's report in the Commons on June 30 on nation's health gives us cause for sober gratitude T total grant made by the Exchequer to the Ministry f the coming year is £266 500,000, and we are getting value for our money True we have no adequate statistical test for positive health, but the records of birth deaths and notifications of infectious diseases show th after a thousand days of war in many ways we healthier than we were in peace-time

CAUSE FOR SOBER GRATITUDE

The birth-rate for 1941 was 14 2, compared with 15 in 1938 and 20 9 in 1916 For the first quarter of 194 the rate was 15 5, the highest rate in any March quart since 1931 The infant mortality-rate for 1941 was *compared with 53 in 1938 and 91 in 1916* The rate f the first quarter of 1942 was 61, the lowest March quarter rate on record The maternal mortality-rate was 2 as compared with 2 97 in 1936 and 4 12 in 1916 Thus *though the birth-rate had been falling,* the survival rate had been increased The crude general death rate was 12 9 in 1941 as compared with 11 6 (which was the lowest on record) in 1938 and 14 4 in 1916 Epidemics called for special care in war-time Dislocation of conditions of living, the congregation of all sorts, tions and ages of people in billets and shelters, the risk of damage to water-supplies had been new factors But statistics showed that during the war the rate of infectious disease had been, with certain exceptions, below the average After centuries of fatalistic suffering we have found ways of mastering epidemic diseases Mr Brown was sure the health education work of the Ministry, the medical profession and public health authorities had a great place in making good practice well known

Apart from tuberculosis, the only infectious disease which had shown a rise was *cerebrospinal fever* In 19 there were about 2000 cases, and in 1938 and 1939 there were about 1300 and 1500 cases, respectively But in 1940 nearly 13,000 cases were notified and in 1941 over 11,000 For the first half year of this year there had been approximately 4000 cases compared with 7000 in the first half of last year and 8000 in the first half of 194 But the fatality of the disease had been reduced from 69% in 1935 to 34% and 20%

The incidence of *diphtheria*—the chief killing disease among children of 4–10—has not fluctuated widely during the last 25 years, there were 53,000 cases in 191 and 50,000 in 1941, but deaths had fallen from 5300 in 1916 to 2600 in 1941 The Ministry had been pressing a campaign for the immunisation of children against diphtheria and by the end of 1941 a third of the child population under 15 in England and Wales had been immunised The authorities in Scotland had done better than that and Mr Brown was not satisfied It three-quarters of our children could be made immune diphtheria *as a fatal* disease would disappear present on an average day 4000 beds were occupied by diphtheria cases The main difficulty in making pro gress with immunisation lay with the parents and wanted quicker cooperation

Scarlet fever was now a scourge of the past In 19 there were 130,000 cases, but the mortality had already fallen to 2100 In 1941 there were 59,000 cases and only 133 deaths *Enteric fevers* were natural sources anxiety in war-time, but in 1941 there were under 50 cases and 118 deaths compared with 6000 cases and 1100 deaths in 1916 It was interesting that not one of these deaths in heavy bombing years was due pollution by water-borne infection There were deaths from *pneumonia* than from all the other infectious diseases combined except tuberculosis In 1941 there were 50,000 cases notified and 26,000 deaths compared *with 23,000 deaths in 1939 and 29,000* in 1940 Pne monia was not notifiable till 1919, but there were 38,0 deaths in 1916 and 59,000 in 1918

AND FOR RENEWED EFFORT

An increase in *venereal diseases* was not unexpe but it was not so great as in the last war Existing vices had been expanded—p aganda is being ued, but the work limiting the spread of infection was mpered by the lack of powers to deal with people who ere unwilling to have treatment *Scabies* was already the increase before the war, and it continued to grow ith the redistribution of population until its incidence eant a substantial loss to production It was really a usehold disease and the investigation of home condi- ons and the follow-up of contacts were essential, and owers to this end had been taken last year There were accurate figures as to incidence, but the latest impres- on was that the increase had been checked

Our *mental hospitals* had their own war-time diffi- lties A number of institutions were surrendered at e beginning of the war to the Emergency Medical ervice As in others there had been overcrowding and ortage of nursing and domestic staff But on the her hand there had been a decline in the number of w cases admitted It had been feared that the strain war would lead to a serious increase in mental dis- ders, but the contrary had proved to be true In 1938 e number of cases admitted was 30 000 and in 1939 it as again 30,000 In 1940 it fell to 28 000 and in 1941 26,000—an eloquent testimony to the nerves of the tion

Finally *tuberculosis* was causing him some concern— d he used the word in the sense in which the Friends se it, with real meaning The number of deaths was ,669 in 1941 compared with 28,144 in 1940, 26,176 in 38, and 53,858 in 1916 The steady fall in tuberculosis the twenty years of peace had been interrupted It as obvious that there existed conditions in war-time hich predisposed to this disease, but looking to the roblem as a whole, Mr. Brown thought we must review ur general approach and give greater practical effect the need for early diagnosis In the past we had nded to concentrate on treatment, but miniature diography was a new and useful weapon of which the llest advantage should be taken He had ordered a umber of sets both from America and from makers in his country, which he would make available to local uthorities as a part of their tuberculosis schemes teps were being taken to see that trained teams were vailable to handle these machines, and he hoped that owards the end of the year they would be in use

We must also tackle the problem of aftercare and ehabilitation on more comprehensive lines Beds for uberculous patients had been available out of the mergency hospital pool, but it was difficult to find ursing and domestic staff No one wanted to use com- ulsion, and they had sought to secure the necessary taffs by propaganda and persuasion and through the goodwill of the professional organisations The number of state-registered nurses at the end of April, 1939, was 4,200 Three years later it was 103,700, so there has hus been a rise in the actual number of nurses, and Mr Brown averred there was not a national shortage out particular shortages of nurses in particular places, nd especially a particular shortage for particular services But on being pressed he admitted that on the whole field of the nation he could do with another 12,000 nurses, and for the tuberculosis services he needed an immediate nrolment of 1200 nurses The London County Council had attacked the problem by making periods of work in a sanatorium a regular feature of the work of their nurses This procedure might be more widely followed, hough it was not free from difficulty We could not afford to fail in the treatment of tuberculosis because patients could not be nursed, and in the last resort he might have to consider a wider exercise of his powers of direction than had hitherto been applied, but if the needs of the situation were properly understood he did not think that would be necessary Nursing was a pro- ession, which like that of medicine, had its special risks and those risks were willingly faced He was advised however, that there was no ground for the belief that nursing in sanatoria need involve any greater risk of contracting tuberculosis than nursing in other hospitals It was in the last year of the last war that the most serious effects on the nation's health were shown—the sharp rise in the incidence of tuberculosis and the pandemic influenza—and we must be on the alert and take measures against such a catastrophe But it was clear that the amount of medical attention that the civil population could ask for must be limited The medical profession had had to meet large calls for the needs of the forces As a nation we must do what we could to get along with less medical attention, but he would concentrate on maintaining those essential services which were vital to the health of the nation

But the Ministry has also an eye for the future And Mr Brown described the watch he is keeping on the food situation from the health point of view through his regional medical officers, the Emergency Hospital Service and by special local surveys which had been undertaken with the help and guidance of two expert medical officers supplied by the International Health Division of the Rockefeller Foundation, the Medical Research Council and the University of Oxford They had also started a hospital survey and he had examined with interest the draft report of the British Medical Association Under Lord Rushcliffe the two committees on nurses and midwives were making great progress They were preparing plans so that the moment labour and material were available they might resume their onward march in housing The Ministry of Health was also playing an active part in connexion with post-war relief in Europe which was being considered by an inter-Allied committee under the presidency of Sir Frederick Leith-Ross The technical aspects of medical relief and nutrition were to be examined by expert subcommittees A good deal of preliminary work had already been done on the requirements of essential drugs in the immediate post-war period and for any possible campaign against epidemics, typhus and malaria

Members' Views on the Health Survey

Mr CLEMENT DAVIES pointed out that we spent over £300 million on our health services, two-thirds went on cures and only one-third on the prevention of ill health Tuberculosis affected us all from Land's End to John o'Groats, yet we were still treating it locally instead of nationally For instance in South Wales five counties and two county boroughs had not adopted a scheme for aftercare It was wrong that the health of a man or woman should depend on the accident of geography He asked for one standard of treatment for the whole of England and Wales Our lack of nurses was due to bad pay and bad amenities, and he believed we could put the whole matter right by putting the amenities right We must change our outlook on poverty At present our laws were for the protection of property, and not for the protection of health Lady ASTOR pleaded for more and better nurseries and nursery schools, and Mr JAMES GRIFFITHS, speaking as chairman of the advisory committee on youth in Wales of the Board of Education, put forward the claims of the adolescent Excessive hours of work were undermining the health of our young people, and he was concerned at the depletion of medical services in the industrial areas He urged that every nurse or domestic worker in a sanatorium should be sure of having a room of her own

Sir FRANCIS FREMANTLE pointed out that the shortage of maternity beds and of institutional beds for tuberculosis were problems not easily solved during war-time. There remained shortage of staff The Athlone committee, of which he was a member, seemed to have gone into hibernation, but he expected great developments from the Reports of the Rushcliffe Committees The public were beginning to realise the importance of prevention and rehabilitation and their education in this direction must be continued so that they would be willing to pay their share of the cost Cases must be followed up, and the doctors in the hospitals, the outside nurses and health visitors ought all to be linked up organically If rehabilitation was to succeed it must be done by arrangement with industry Sir Francis felt that post-war plans should not be too precise so that those away on service might take part in the final discussions He urged that powers should be taken to compel people with venereal diseases to go for treatment Sir DERRICK GUNSTON has never understood how we could spend so many millions on health services and yet spend so little on our nurses' wages Mr H C CHARLETON asked the Minister to push the Board of Control overboard and himself undertake even wider duties The active treatment of the mental patient had lately developed and he hoped that the Minister would start to organise these scattered experiments The Board of Control was supposed to visit mental defectives under guardianship, but he knew of cases where there had been no board of control inspection for as long as five years Dr Russell Thomas did not want to see the old relation between doctor and patient altered A doctor, worshipping at the shrine of the statistics of bureaucracy, could forget his patient

Mr H McNeil and Sir Ernest Shepperson joined in the appeal for an active policy to stem the rising tide of tuberculosis Dr Edith Summerskill pointed to the prevalence of non-pulmonary tuberculosis among children and asserted that on a conservative estimate 40% of these cases were due to infected milk Evacuated children in country areas were now consuming unpasteurised milk She also asked the Minister to make it compulsory for local authorities to teach their midwives to administer anæsthetics After four years only 66 out of 188 local authorities were using their powers in this regard although there was a safe portable apparatus on the market Captain G S Elliston was disappointed at the result of the national appeal for diphtheria immunisation, and Mr D J Quibell deplored that trained maternity nurses were being transferred into industry to give first-aid Dr H B Morgan admitted that good work was done by the voluntary hospitals but condemned them as "undemocratic and unrepresentative organisations ' Great tragedies, he said, sometimes happened in voluntary hospitals and no proper investigations could be obtained What we needed was one unified national system of hospitals The Minister was sheltering behind those who were attached to teaching schools Dr Morgan had no complaint against teaching schools, but there was no reason why the voluntary hospitals attached to them should not come under a national authority subject to Parliament The Ministry, he continued, was dead as far as rehabilitation was concerned and he did not propose to rattle the bones He had done his best, he cheerfully added, to awaken the poisoned corpse and failed But in spite of these macabre asides he wound up by paying a sincere tribute to the Minister and his parliamentary secretary and urging them to sit down and devise a comprehensive scheme under which local authorities would have powers for the prevention diagnosis, treatment and cure of tuberculosis Mr D L Lipson thought the housing position was far from satisfactory and Mr K Lindsay asked for a real charter for youth

Mr G S Woods said the debate had dealt with everybody except the patients

Miss F Horsbrugh closed the debate with replies to some of the points raised She promised the biggest housing drive possible at the earliest possible moment The prime necessity for dental treatment was an expansion in the number of dentists and dental mechanics The Minister had done a great deal to induce local authorities to give instruction to midwives in administering anæsthetics to women in childbirth, but he had no power to force them The matter of trained midwives going into the Services was being looked into with a view to retaining them in civil practice There were now 90,000 nurses, student nurses and nursing auxiliaries working in civilian hospitals, including isolation hospitals and sanatoria which took both Service and civilian casualties That was 8000 more than at this time last year, and she wished to see another 12,000 nurses provided to get over the 100,000 mark in the hospitals If they could get 1000 or 1200 nurses into sanatoria they would be all right They were looking to the Minister of Labour to see that more people undertook domestic work in hospitals and sanatoria Nothing definite could be said about after-care until the report of the committee of the Medical Research Council was received She would look into the question of the price of insulin, which Mr G Griffiths had raised, especially as it affected people who were not insured

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" I have treated all kinds of diseases that I know the names of, and a lot of them I don't know, I suppose Wild Welch bacillus is just one of about five thousand foreign bacillus that gets in the colon It is supposed to come from wild Welch rabbits "—Testimony of Hiel Eugene Crum, a doctor of naturopathy, before the Indiana State Board of Medical Registration *J Amer med Ass* May 9, 1942, p 204

Letters to the Editor

DIFFERENTIAL DIAGNOSIS OF DYSPEPSIA

Sir,—The report on 217 Service cases of dyspepsia Morton Gill Berridge, and Arden Jones published your issue of June 20 fully justifies the decision of Director-General EMS to give them control of a s section of a hospital for their work Their results are great interest, but some of their conclusions seem to us be based on insufficient evidence

(1) Contrary to our experience and to that of other physicians they regard gastritis as the cause severe symptoms which are very resistant to treatment, whereas we believe that a large majority of cases are completely latent and the remainder get well rapidly with simple diet, together with lavage of the fasting stomach when associated with hypochlorhydria and excessive secretion of mucus If the causes, such as insufficient masticatory surface, septic teeth, excessive smoking and gross dietetic errors, are removed, recurrence is rare. The contrary experience of Dr Morton Gill and his colleagues is doubtless due to the fact that they were dealing with patients suffering from exhaustion or anxiety, which expressed itself in dyspeptic symptoms because of the associated gastritis, to cure them they required simple psychotherapy in the form of explanation in language suited to their intelligence, persuasion and re-education - With a predisposition to circulatory insufficiency the same patients would have developed the effort syndrome

(2) With regard to duodenitis we are not convinced that the diagnosis is justified by the radiological observations of Cordiner and Calthrop, whose mucosal relief methods had been used by Scott and by Briggs several years before Berg's work became known in this country. The radiological diagnosis of gastritis can be controlled by gastroscopy, which has shown how unreliable it is. The radiological diagnosis of duodenitis has never yet been confirmed, and it is difficult to see how anything short of quite unjustifiable surgery in the form of duodenectomy could ever confirm it The statement that "ulcers complicating duodenitis are usually superficial and appear to be implanted on the swollen rugæ' and that "they often heal rapidly leaving the duodenitis still present and apparently active" appears to be purely imaginative We are quite unfamiliar with the clinical picture with its dismal prognosis which Morton Gill and his colleagues draw of this condition either among civilians or soldiers

(3) Although only one case was diagnosed as mucous colitis, it would be of interest to know what is meant by this, as mucous colitis is in our opinion a quite mythical malady

(4) In six cases looping of the first part of the duodenum was thought to be related to the dyspeptic symptoms It seems incredible that this is anything more than an anatomical variation from the normal of no greater importance than those other mythical maladies, gastroptosis and enteroptosis, which happily do not appear among the diagnoses in this series of cases

(5) The fact that not a single case of chronic cholecystitis was found among 217 dyspeptic soldiers shows that the possible presence of this common condition could not have been sufficiently borne in mind, as a careful clinical investigation with a properly carried out examination of the gall-bladder contents could hardly have failed to reveal several cases of the kind

(6) Morton Gill and his colleagues state that at present many men are returned to duty with the diagnosis of non-organic dyspepsia in the hope that they can be persuaded to tolerate their symptoms, and that failure to recognise these as genuine must create in their minds a growing sense of injustice and dissatisfaction Of course their symptoms are genuine, and we feel convinced that most, if not all, of them could be quickly cured if simple psychotherapy from their own medical officers, but not from a psychological specialist, were substituted for dieting which they cannot carry out under Service conditions

Oxford and Sevenoaks

Arthur Hurst,
John F Venables

EATMENT OF THE "CRUSH SYNDROME"

IR,—In June of last year we brought forward lence to suggest that the approach to the problem of "crush syndrome" had previously been from a ng basis, and that the condition including its renal nifestations was the result primarily, not of toxæmia simply of the loss of blood constituents into the ured limb, the capillaries of which had temporarily their function Applying this conception thera-tically we argued that the primary principle of atment should be to stop the limb swelling, or if was swollen to reduce the œdema This we achieved applying positive pressure of 60 mm Hg to the limb published details of two cases successfully treated on se lines (*Lancet*, 1941, i 780)

Strong experimental support for our theory has ently been furnished by Duncan and Blalock (*Ann rg* 1942, 115, 684) By compressing the limbs of dogs a special clamp, they have produced a syndrome nilar to the crush syndrome of man, including shock d renal failure Untreated 18 out of 19 dogs died t when the damaged limbs immediately after release m compression were enclosed in a pneumatic tube th a pressure of 40 mm Hg 15 out of 21 dogs survived Further experimental work is clearly required, par-ularly to elucidate the mechanism of production of e renal symptoms We suggest, however, that there now sufficient evidence to justify routine prophylactic eatment being standardised on the lines advocated in r article If this view is accepted, first-aid workers ould be instructed to bandage firmly the limb as soon it has been released Immediate treatment on the me lines should be carried out in hospital either with e apparatus we suggested or some modification which lfils the same principles The present lull in aerial mbardment in many districts offers a suitable portunity for working out the requisite measures of ganisation

DAVID H PATEY,
The Middlesex Hospital, W 1   J DOUGLAS ROBERTSON

REACTIONS TO THE REPORT

SIR,—May your erstwhile special commissioner, his personal capacity, congratulate the BMA Medical lanning Commission on their draft interim report? he striking reforms which it proposes, and with which think most younger doctors will agree, are

1 A complete medical service for 90% of the population
2 A substantial measure of free choice of home doctor
3 A substantial improvement in the conditions of work and therefore in the standard of possible service) of the home loctor, including a period of apprenticeship in a health centre, he abolition of sale of practices, appointment on merit, ontributory pensions, full professional coöperation, and an ncreasing part in preventive medical services (ante and post-atal work, school medicine and immunisation services)
4 In return, the home doctor will relinquish his consultant nd specialist activities to those who are specially qualified nd continuously practising the specialties
5 A regional hospital service, with full time and part ime clinical posts, and a domiciliary consultant service
6 In both general and special practice, the clinician is to e equal with and not subordinate to the administrator, both n status and remuneration, and a democratic medical ommunity is to be assured

Are there good and sufficient reasons for excluding he "upper 10%"? Among this group there are many eople who prefer private contract, but there are also nany who would welcome the opportunity of joining he National Medical Service The burdens of sickness re often proportionally heavier on those earning £420 year and upwards than on the lower income groups Surely, the common-sense answer is to open the National Medical Service voluntarily to the "over £420s"

The question of social medicine as a factor in positive health is not considered By social medicine one does not mean anything mysterious or "high falutin," but rather the prevention of poverty, whether due to sickness, disablement large families, old age, or unemployment If we can abolish poverty, we shall have largely overcome the problems of suboptimal nutrition, apart altogether from the mental results of financial insecurity At the same time, new problems in the prevention of exploitation will arise as a result of deliberate absenteeism and refusal to work, and feigned or hysterical illness The solution is not to be found in more and better medical boards but rather in transferring the responsibility for these decisions to committees of the worker's equals Such committees should hear medical evidence, and are inherently likely to give reasonable decisions which will have the sanction of the workers' own society This has in fact been the war-time answer to the problem of absenteeism, judgment on the offender is passed by the works production committee, often with a worker in the chair

The proposed links between the National Medical Service and the public which it serves are not of a very direct and personal nature The war has brought home to many of us that the British public will always cooperate if approached cooperatively If one is prepared to listen patiently to all complaints and explain difficulties, the feeling of partnership in enterprise is built up There is room for local health committees in areas served by each small group of health centres Such committees can act as valuable channels for receiving information from the public and also imparting it in a personal and direct way A working war-time example of such a service is the local information committees of the Ministry of Information

The rôle of the medical officer of health is not defined He is to be shorn of his clinical duties What is he to become? His special function should be that of the "*social doctor*," with the rank of a specialist on the staff of the local or group hospital, available for consultation with the home doctor whenever environment appears to be implicated He should keep the statistical picture of the health of the area, and provide a health intelligence service, while retaining his functions in connexion with advice on environmental matters to local authorities

There is a long and hard road to be travelled between the draft interim report and the Statute Book One hopes that the report may be strengthened—or at least not watered down—in its passage through the commission and the association Beyond that lies a stiff job of lay education—first among the ordinary public, secondly among the legislature and the central government officials, and last, but by no means least, among the local authorities

London   STEPHEN TAYLOR

COTTON LIGATURES

SIR,—In support of Professor Pannett's plea for the extended use of cotton as ligation and suture material, I should like to record that during the past few months I have performed nearly 150 general surgical operations using Coats's No 24 black cotton for every purpose except for uniting mucous surfaces For suturing the peritoneum a strand of cotton has been used doubled and inserted as a continuous stitch, but in all other situations intermittent single-thickness sutures were employed The cotton, which costs 6½*d* a reel, is wound in a single layer (I think this is important) around a piece of rubber drainage-tube and is boiled for 20 minutes It is convenient to clip the loaded rubber tube to the towels near the wound so that a continuous supply of ligature material is at hand The assistant must be instructed to cut the ligature much closer than when catgut is employed In all cases I have dusted the parts concerned in the cotton with sulphanilamide-allantoin powder (Genatosan) No case of wound infection has yet occurred A small proportion of the operations were for infected conditions—e g, appendicectomy for perforated appendix with peritonitis, Thorek's cholecystectomy for empyema of the gall-bladder

Harley Street W 1   HAMILTON BAILEY.

*_** Messrs Allen and Hanburys Ltd suggest that Professor Pannett's article may give the impression that sterilised surgical catgut is difficult to obtain They assure us that the eight firms licensed by the Ministry of Health to manufacture sterilised catgut in this country will be able to meet future demands in both home and export markets, though difficulty may be encountered in obtaining supplies of some brands —ED L

DANGERS OF DULCIN

SIR,—Since official benediction seems to have been given to the use of dulcin as a sweetening agent by the authorisation of the sale of standard amounts in tablets to the public, and since the Extra Pharmacopœia (Vol I p 901) says merely that it is " stated to be innocuous," it seems important to call attention to two articles which, as far as I know, have not been contradicted

Dulcin is *p*-phenetylcarbamide and is allied to phenacetin, being derived from *p*-amidophenol or its ethyl ether *p*-phenetidin both of which according to W A Uglow (*Arch Hyg Berl* 1925, **95** 89) are toxic, causing hæmoglobinæmia cyanosis, sweating and nephritis Uglow says that the use of dulcin started in Russia in 1917, and he quotes a report by Prof A A Lichatschoff that dulcin is partly broken down in the body to *p*-amidophenol so that it should be used only in small doses and by healthy people A year later it appeared again in Russia, but was rejected by a committee after experimental investigations, it was found that cooking of faintly acid, neutral or basic solutions led to the formation of *p*-amidophenol Uglow summarises the rather contradictory findings of other observers, and he *concludes that dulcin acts as a blood poison, and that* its use as a sugar-substitute should be forbidden

In the second article Rost and Braun (*Z angew Chem* 1918, **31** 180) say that dulcin is toxic in large doses, especially to young animals, *p*-amidophenol being liberated They say that amounts up to 0 5 g (corresponding to about 125 g of sugar), spread out over the day may be regarded as harmless to humans They quote a fatal case in a child who took 8–10 g, while another child who took less became seriously ill

The specimen of dulcin I examined was much less sweet than saccharin, and a good deal less than is usually claimed for the substance, so there seems a possibility of the safe dosage being exceeded I note, too, that the report of the Campden Research Station recommends the use of dulcin for sweetening canned fruits, as being "probably less toxic than saccharin " In the process of autoclaving these the state of affairs the Russians found dangerous—cooking in faintly acid, neutral or basic solutions—might be reproduced

Hayward's Heath J W SHACKLE

INTRAMEDULLARY TRANSFUSION

SIR —Your annotation of June 27 (p 769) concerning American reports on intramedullary transfusion prompts us to record our own recent experiences in this field

During the past few weeks we have performed eight transfusions via the sternum on adult patients suffering from the following conditions leukæmia (1), aplastic anæmia (3), hæmophilia (2) and hæmatemesis (2) The technique of introducing the needle into the sternum was identical with that which we have been accustomed to employ in sternal punctures for diagnostic or research purposes After infiltration of the skin, subcutaneous tissue and periosteum with a local anæsthetic, an ordinary Salah sternal-puncture needle is introduced in a perpendicular or slightly inclined plane into the sternal cavity, at about the level of the upper border of the third rib The stylet of the needle is withdrawn, a 'Record' syringe attached to the needle and a small quantity of marrow juice is aspirated The syringe is then removed and the adaptor of the transfusion apparatus, previously set up, is forthwith connected to the needle and the transfusion proceeded with

We have not found preliminary washing out with saline necessary Whole citrated blood was used, and the reservoir suspended at a height of 3–4 feet above the patient's chest The control clamp was opened to its full extent, the rate of flow being governed by the ability of the contents of the medullary cavity to absorb the blood In our cases the rate varied from 50–150 drops per minute, being on the average approximately 120 The amount of blood transfused at one session ranged from 1 to 3 pints In no instance was any difficulty or untoward result noted, nor was any discomfort complained of We observed that, on completion of the transfusion, removal of the adaptor was followed by a reflux of blood through the needle After withdrawing the needle however and strapping a pad over the puncture wound no trouble with bleeding was encountered Strict sterility is obviously called for Our has been to cover the area around the needle wi sterile towels No support for the needle has found necessary as it stands firmly in the cortex bone

Our experience, admittedly so far very limited, confirms the claims made for the simplicity, conv and safety of this method of blood-transfusion method should also clearly be of value for saline and other fluids While it is probable occasional pathological conditions may render sternal cavity relatively impermeable, in the majority of cases the adoption of this technique render cutting down on veins unnecessary As observe in your annotation, the method should of particular value in obese or shocked patients collapsed veins

L J DAVIS,
JAMES INNES

Department of Medicine, University of Edinburgh

RUSSIAN-ENGLISH TECHNICAL DICTIONAR

SIR,—There is an urgent demand for an up Russian-English dictionary of scientific and *terms A number of Russian-English glossaries* specific terms have been compiled by various sci institutions and individuals, and it would be extremely helpful to scientists and technical translators if copies of these glossaries could be collected together and placed in the Science Library in London where one complete set could be consulted Will, therefore, any insti or individual who has compiled a glossary of R scientific or technical terms, whether printed or m please sent a copy to the secretary, Anglo-Soviet Sci Collaboration Subcommittee, The British Council, Hanover Street, W 1, who will collect these for Science Library It is hoped later to compile a dictionary, but the immediate aim is to collect different glossaries in one place where they can be sulted Each glossary will be known by the name its compiler

E J RUSSELL,
Chairman, Anglo Soviet Scien
Collaboration Subcommittee

CHALK IN BREAD

SIR,—In his letter of June 27 Mr Bacharach accuses me of " ignorance, unpardonable in a public man, or wilful distortion," because I implied " that the calcification of bread has been adopted on the unsupported advice of non-medical biochemists " I submit, Sir, that this is a precisely accurate description of the genesis of the proposal to add calcium to bread This is made entirely clear in a Parliamentary answer to me of Feb 12, 1942 (I gave the reference in my letter to you of June 13t The Parliamentary Secretary stated that the " scientific advisers," upon whose advice the Ministry had acted in the " fortification " [including calcification (E G L.)] of bread, were Professor Drummond, appointed in February, and Dr T Moran, appointed in June, 1940 The decision to add calcium was announced in a debate in the House of Commons on July 18, 1940 The present decision, as another recent Parliamentary answer indicates, is a mere fulfilment of that undertaking Lord Horder was not appointed as adviser to the Minister until 1941 and could not be concerned with the decision announced in July, 1940. It is to be noted that the calcium was then to be added to *white* bread and that the phytic acid bogy was an after-thought—a full year after! grand old man of chemistry, Sir Wyndham Dunstan, writing in the *Times* of Jan 20, 1942, voiced a prot similar to mine, against the neglect by the Ministry Food of consultation with the medical profession referring to the " tergiversations of the Ministry of F which if brought together would surely be with parallel in the record of any Government department, he added " it would be to the public advantage if three four physicians of eminence were selected to advise t Minister before decisions are taken on questions invol the public health "

More important considerations are raised in the lead in your issue of July 4, which seems to indicate that th is a positive " danger " to the community in the sumption of bread made of high extraction flour, dan proportionate to the degree of extraction If ement has any scientific sanction—and it surely flicts with immemorial human experience—the nger" cannot be limited to war-time, but must hibit any future general consumption of bread sing the whole grain I would commend to your ice the comments on this subject by the late Sir lliam Bragg, then president of the Royal Society, in *Times* of Oct 26, 1940, occasioned by the Govern- nt's proposals of the previous July for "fortification" bread After a caustic reference to " fads that have no nt but novelty." and pointing out that when whole- al bread formed one of the principal items of diet the trition of nations so fed was superior to that now vailing, and after an eloquent plea for restoration of olemeal, he said

> Science is built on the accumulation of experiences, and ery scientist knows that he must not base his conclusions ly on the last few experiments in the laboratory He must ke into account all that has been done before History is him a very real thing tradition is priceless, because there no substitute for it Practice is based on the experiments innumerable years, and even when there are no written ords to be consulted, the behaviour of men, the thoughts ey have turned over and sifted, the knowledge they have ined in ages of trial and error are all of value they are not be thrown aside in favour of the last galvanometer reading "

House of Commons E GRAHAM-LITTLE

ESTIMATION OF SULPHONAMIDES IN THE BLOOD

SIR,—In his letter in your issue of June 6 (*p* 694) Mr S Hawkins suggests the production of a Lovibond nparator disc for the estimation of sulphonamides the blood, using the method of James May we, as e makers of these instruments, be allowed to say at there are already available three different discs these estimations, using three different methods ? ie first issued in 1939, employs Proom's modification Fuller's method (*Lancet* 1938 i, 260), with sodium hydrogen phosphate and dimethyl-α-naphthylamine ie second disc, issued in 1940, employs Bratton d Marshall's method (N-(1-naphthyl) ethylenediamine hydrochloride) while the third follows Werner's chnique (*Ibid* 1939, i, 18) with *p*-dimethylamino- nzaldehyde In all three cases it has been established at the more usual sulphonamide derivatives may be timated with these discs by the use of a suitable nversion factor, as discussed in the explanatory erature These alternatives seem to cover all normal quirements but if at any time it is shown that a new ethod has outstanding advantages we shall be pleased investigate with a view to producing a further andard disc

Milford Salisbury TINTOMETER LTD

Public Health

Smallpox Imported at Glasgow

THE story of an imported case of virulent smallpox into is country can now be told more fully A ship from ombay arrived in the Clyde on May 29 when an electrical igineer was found to be suffering from smallpox and as transferred to Robroyston Hospital where he died n June 2 He had sickened on May 21/22, the rash ppearing two days later and becoming confluent All rsons on board the ship were examined and re- ccinated, passengers being allowed to proceed to their stinations where the regional MOH was informed n June 5 an engineer was found at the daily crew spection to be febrile with swelling of the arm and local lenitis associated with severe vaccinal reaction On ie 7th he was removed to hospital when a few macules ere observed on the skin of the upper chest Further acules appeared and matured and although after the itial febrile attack he was not ill in himself he was garded as a case of modified smallpox Several other embers of the crew were removed on suspicion, some these also were regarded later as cases of modified nallpox

In the early hours of June 10 an assistant cook who id no obvious direct association with the original case as removed to hospital with a morbilliform eruption, the diagnosis being at first complicated by his having taken a large number of sulphapyridine tablets By midday, however, papules were showing and he died of confluent smallpox on the 15th He had been successfully vaccinated on May 29 On June 11, one of the departmental MOs dealing with the cases fell ill of smallpox He had been twice revaccinated without taking and had some degree of protection from previous vaccination On June 21 another member of the crew whose vaccination did not take on May 29 but did on June 11 developed a very modified attack

Two passengers are known to have become affected One was a Polish pilot officer who had been vaccinated in infancy, at 7 years and 21 years, and again on May 29 His attack amounted only to a few papules The other was a baby who fell ill while under observation at Swindon, where there were two further cases This appears to mark the end of the " ship phase " of the outbreak, the total cases involved being eleven Eight were modified very considerably, and six of them were so modified that the diagnosis was extremely difficult, depending upon careful observation of the evolution of the lesions

Between June 22 and 26 sixteen cases were reported among the general population in widely separated parts of the city away from the dock area 2, 5 4, 3, 2 on successive days They must have arisen from a source of infection which existed between June 10 and 14 but inquiry failed to reveal any connexion with the ship. or with the hundreds of ship contacts who were vaccinated and kept under daily surveillance The disease when fully developed was typical Asiatic smallpox Two of the cases were hæmorrhagic, one of them fatal In all by July 6 there had been four deaths Four of the cases were aged 10–15, the numbers in successive older decades being 2, 2, 4, 1, 0, 3

Energetic measures were taken by the Glasgow public health authority to cast a wide net of vaccination around each case and supervise contacts On June 29 it was decided to advise and offer general revaccination to the population of the city, 24 centres were opened on July 1 and 40,000 persons vaccinated on the first day A state of epidemic was declared in the district of the port of Glasgow by notice in the *Edinburgh Gazette* dated July 3

Sir Alexander Macgregor remarks that the two points of special interest about the outbreak are

(1) The occurrence among the ship's crew and passengers of cases complicated by vaccinal reactions and modified almost beyond recognition, side by side with a confluent case where vaccination was apparently not early enough to afford protection

(2) the spread of the disease in the general population with no obvious connecting link with the ship

Infectious Disease in England and Wales

WEEK ENDED JUNE 27

Notifications—The following cases of infectious disease were notified during the week smallpox, 2 (at Swindon), scarlet fever, 1320 whooping-cough, 1394 diphtheria 719, paratyphoid, 8, typhoid, 6, measles (excluding rubella), 6375, pneumonia (primary or influenzal) 655, puerperal pyrexia, 188, cerebrospinal fever, 108, poliomyelitis, 12, polio-encephalitis, 1, encephalitis lethargica, 6, dysentery, 151, ophthalmia neonatorum, 94 No case of cholera, plague or typhus fever was notified during the week

Deaths—In 126 great towns there was no death from scarlet fever, 1 (0) from an enteric fever, 7 (1) from *measles*, 8 (0) from whooping-cough, 11 (0) from diphtheria, 31 (6) from diarrhœa and enteritis under two years, and 6 (0) from influenza The figures in parentheses are those for London itself

Hull reported the death from an enteric fever. Halifax Liverpool and Birmingham each reported 3 deaths from diarrhœa

The number of stillbirths notified during the week was 235 (corresponding to a rate of 38 per thousand total births), including 17 in London

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BRITISH HOSPITALS ASSOCIATION—This association has in the current year increased its membership by 106 hospitals and 35 convalescent homes and homes for incurables The total number of constituent institutions is now 985

MEDICINE AND THE LAW

Cancer Act Prosecution

Walter Sharples, of little Bispham near Blackpool, was prosecuted at Fleetwood lately for having inserted in a newspaper the following advertisement "I am willing to give my services free to those suffering from cancer on the tongue, and I guarantee a cure within 48 hours, providing it is in its early stages" The Cancer Act, 1939, forbids the advertisement of offers to treat persons for cancer or to give advice in connexion with such treatment Mr Sharples, who pleaded guilty, said he was under the impression that he was doing nothing wrong, he was fined 20*s* Two defendants who published the newspaper were fined £2 10*s* each, it was said on their behalf that the advertisement was inadvertently accepted The deputy clerk to the Lancashire county council, who prosecuted, told the magistrates that this was the first prosecution of its kind in Lancashire and the North of England, possibly the first in the whole country Two years ago, however[1] the Bath magistrates bound over a herbalist for displaying in a shop window a claim to cure cancer "We think you did not know about the statute," said the chairman of the bench, adding rather surprisingly "we did not know about it ourselves" But the purpose of the law is clear The exploitation of fears and hopes is a scandal of which Parliament took belated notice There have been three stages in the restriction of undesirable advertisements of remedies—the Venereal Disease Act in 1917, the Cancer Act in 1939, and the Pharmacy and Medicines Act, dealing with Bright's disease, diabetes, epilepsy, paralysis, tuberculosis and certain other named diseases, in 1941 The legislature seems to have treated such advertisements more tenderly since the last war The 1917 act contemplated trial on indictment with a maximum penalty of two years imprisonment, in summary proceedings before magistrates there might be a fine of £100 or a sentence of 6 months' imprisonment The 1939 and 1941 acts contemplate summary proceedings only, the maximum punishment for a first offence is a fine of £50, for a second offence the penalty may be £100 fine or 3 months' imprisonment or both The two later acts contain safeguards and statutory defences which were not provided in 1917, moreover no prosecution under them can occur without the consent of the Attorney General and Solicitor General Treatment for venereal disease creates possible opportunities for blackmail, otherwise it is hard to see why the legislature should have become less firm in suppressing the cruelty which these offences inflict Prosecution, even if the resultant sentences are slight, may give a needed publicity to the statutory prohibition We must hope, too, that a more general knowledge of the elementary laws of health will destroy the appeal of a promise to cure cancer within two days

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[1] *Lancet*, 1940, i, 708

HOME FRONT CASUALTIES —At 2 30 P M on Thursday, July 16, at the London School of Hygiene, Keppel Street, W C 1, Prof M Greenwood, F R S, will give a public lecture on civilian hazard of life in this war and in the last

DIPHTHERIA FILM —In future applications from local authorities and MOH's for hire of the film "Defeat Diphtheria" should be addressed to the Central Film Library, Imperial Institute, South Kensington, London, S W 7 There are 25 copies of this sound film in 16 mm size (non inflammable) and 4 in 35 mm size (inflammable) and applications to borrow it should be made at least two weeks in advance, specifying the size required and the make of sound projector with which it will be shown No attempt should be made to get this film shown in public cinemas during ordinary performances as this would be a breach of an agreement made with the Cinematograph Exhibitors Association. Arrangements may, however, be made for showing it in cinemas outside ordinary performance hours, and of course at other places, provided that no admission fee is charged If it is desired that the film should be shown by the Ministry of Information's mobile film unit application should be made to the film officer attached to the Ministry's regional headquarters A silent version of the film is in production

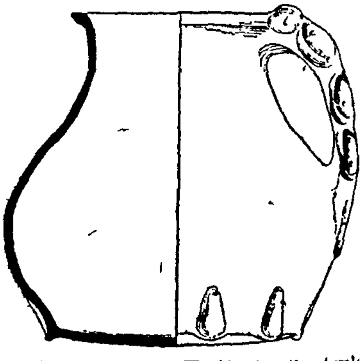
Notes and News

A MEDIEVAL JUG AND ITS CONT

G C DUNNING, BSC, FSA

HANDLED jugs are often found in excav medieval sites and this in itself is an indication indispensable place occupied by these vessels in household of the Middle Ages A great deal co the uses of jugs and other pots may be learnt illustrated manuscripts, and is more informative varied than the evidence obtained from excav These sources show that jugs were commonly drawing water from the courtyard well, in drawing from casks and storing it in the cellar cupboards, were in frequent use to serve wine at the table

A different purpose is evident for a jug in the H Museum, and I am indebted to Mr H C Andrews, the curator, for permission to publish this account of it (see figure) The jug was found about 1903 on the site of the Green Dragon Inn at Hertford It is of unglazed grey ware, 6¾ in high and 7 in in body diameter, of squat globular shape, and the handle is marked down the sides by large thumb impressions It ha sagging base usual to medieval jugs, and the ed thumbed down at intervals to render it more a feature not known earlier than the thirteenth The jug is most probably of the period 1250–1300



Medieval jug from Hertford (¼ natural

The inside surface of the jug is covered with a buff incrustation, thick and granular on the body vessel, thinner and smooth towards the narrow Mr E M Jope, of the Nuffield Department of chemistry, Oxford, reports on the incrustation as fo

> The pale buff amorphous deposit shows no definite cr line forms on microscopic examination, and consists n of sodium urate, which is at times deposited from acid u usually adsorbing much urinary pigment on the surface particles as it settles On analysis the deposit prov contain a high percentage of nitrogen, and it ans slightly but definitely to the murexide test for uric aci solution of the deposit in dilute hydrochloric acid g yellow-green fluorescence and a spectrum absorption ba the region of 500 mμ, both characteristic of excreted pig resulting from the normal physiological breakdown of pigment This is a striking illustration of the stabil these pigments, and points to the urinary origin of the No chlorides or phosphates could be detected and alt concentration of these in the urine may be depres certain pathological conditions, such as high fever finding taken in conjunction with the presence of sodium and the urobilinoid pigment, which indicate that no he been applied, gives a fairly adequate proof that it is a deposit and not the medieval "sal urinæ," and t resulted from the evaporation to dryness of the contained in the jug

From Mr Jope's report it might be concluded the vessel had been in use for some time simply urinal, but urinals were not introduced until much It is more likely that the jug was used for storing the drinking of which was highly recommended Middle Ages as a remedy for plague and various ail

POSTURE IN INDUSTRY

AT a meeting of the Association of Industrial M Officers held in London on April 25, Dr H A professor of anatomy at Cambridge, spoke on post industry, and dealt first with the development human spine In intrauterine life there is one only At twelve months of age the cervical led Later, as the child walks, the sacral part of the y curve develops The upper part of the spine is icerned with rotatory movement, and the lumbar with xion In old age, both the power of rotation of the per segments and the power of flexion in the lower gments are gradually lost There are four elements in e maintenance of posture (1) proprioceptive impulses om muscles, tendons and joints, (2) semicircular-canal ipulses, (3) evidence of the visual fields, and (4) ctile sensations, especially from the soles of the feet ie sum total of these four gives the information to the ain which is necessary for the determination of posture fact, posture might be described as the neuromuscular echanism by which man keeps himself right-side-up ith the world, so that the world will appear right-side-up him. If the influence of each or any of the four factors absent then the steadiness or maintenance of position ill be uncertain As an example, it may be important keep the feet warm and to use footwear to which one is customed when one is in a position where the tactile nse of the feet is important in maintaining position

Professor Harris next discussed certain critical moveients whose integrity is important if the body is to inction as a satisfactory machine. These are as illows

1 Rotation of the head, which is controlled by muscles ipplied by the cervical nerves and the spinal accessory nerve

2 Abduction of the eyeball, here the muscles responsible e the lateral recti (6th cranial nerve)

3 Abduction of the vocal cords for phonation, activated y the laryngeal branch of the vagus

4 Supination of the forearm, this is controlled by branches the musculocutaneous nerve, the fibres being derived from ie 6th and 7th cervical segments

5 Abduction and adduction of the fingers, controlled by ie deep branch of the ulnar nerve (C8, T1)

6 Opposition of the thumb, activated by the median nerve hich contains fibres from the 6th, 7th and 8th cervical egments

7 Eversion of the foot, which is among the last movements equired during a child's development, depends on the itegrity of the external popliteal nerve, the grave disability hich follows Pott's fracture arises from inability to perform his movement freely

8 The action of the gluteal muscles is important in that hey involve movement of the body forwards from the standng still position, from sitting to walking, and in speeding up of pace, carrying, &c, they are innervated by the gluteal ierves, which contain fibres from the 4th and 5th lumbar and the 1st sacral segments

When any of these critical movements are interfered with one of three nerves is most commonly affected The 6th cranial nerve, the ulnar nerve and the superior gluteal nerve appear to be the most vulnerable to attack by injury or disease The gluteal nerve, which consists of fibres from the 4th lumbar segment, follows a very omplicated course, this may, in part, account for its vulnerability

Professor Harris then referred to the importance of emembering the ages at which certain epiphyses join up, so that the strain of heavy lifting may be avoided at an early age where this would be dangerous He cited the coracoid process to which the biceps muscle is attached and the ossification of the pelvis at puberty as examples In the former case heavy lifting by young boys, and in he latter long periods of standing by young girls, are to be avoided on this account The epiphysis of the oracoid process joins up at 15 years, and the centre of the os innominatum does not attain full bony maturity until 18 years Many accidents are due to the fact that a ramped posture did not allow muscles to respond rapidly when quick movement was needed In conclusion, Professor Harris said he is often asked whether factory work may have a serious effect on women's health Provided certain elementary medical and physiological facts are intelligently applied with regard to their work there is no reason why it should be harmful

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SIR ERNEST GRAHAM-LITTLE has been re elected as a representative of the senate upon the court of London University for a further period of five years

SULPHONAMIDE POWDERS —We understand that methods of sterilisation are now being worked out by the manufacturers in coöperation with LCC pathologists

ALLIANCE

AT a reception held by the Anglo-Soviet Medical Committee on June 29 messages were read from medical organisations and doctors in the Soviet Union, including · M Georgi Miteryev, the People's Commissar of Public Health, Surgeon N S Burdenko, Prof S. S. Girgolav and Prof I G Rufanov, chairman and vice-chairmen of the All-Union Association of Surgeons; the Soviet Scientists' Anti-Fascist Committee, and Academicians Lena Stern, N N Burdenko and A D Speranky. Some messages recalled personal contacts with English colleagues and paid tribute to our surgical tradition and to Lister, whom they rank with their own great Pirogov. We can look with equal respect towards the achievements of Russian surgery, in which the All-Union Association of Surgeons justly take pride

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University of Oxford

In a congregation on June 25 the following degrees were conferred ·—

M.D —*O H J M Telling
B M —J K G Webb and *Maxim Evnine

* In absence

University of Cambridge

At recent examinations the following were successful —

FINAL EXAMINATION FOR M.B B CHIR

Part II physic pathology and pharmacology —B G C Ackner, W B Alexander, V R. Arulanandom, W E S Bain, G P Baker, R C Barclay, A D Barlow, G M Barrett, J A V Bates A O Bech, N L Birkett J A. Black G G B Blackman, A Bolton, P F Borne B F Brearley, M M Brown R J K Brown P. H Buxton C D Calnan, T O Candler, F S Carter, W E Church N D Compston, E G A Crawshaw N F Crofts, M O Cross, G E L Cummins, C H K Daly, R E Danckwerts, P M Daniel, H G Danziger, R. W Danziger, I N Darbyshire, J Dean, G H Dhenin, R Dobson, C O Edwards R M Emrys Roberts, P Eskell, W F Felton, J. H L Ferguson G E Ffrench, J L Fluker, J B. Foote, J A. S Forman, D G R Fox F S Glassow, E C E Golden, N J Goorney, J A B Gray, G F Green, E J Harrison, E J Holborow, R A Holden P Hugh-Jones, A Hulme, W P U Jackson E B Jarrett, M R Jeffrey, D M Jeffreys H W F Jones, H D Juler, T D Kellock, D E R Kelsey, J M S Knott, H P König, H M Lawson A G Leacock, T L T Lewis, K. H Lim, K T Lockhart H E Lockhart-Mummery F L Lomax, V U Lutwyche, A Lyell M L Macalister, I Macdonald, L R McLaren, S J R Macoun, H G McQuade, H C Mason, R G Mathers R. M S Matthews L H H May, R H Meara, R B Meyer, R G Miller, W K. S Moore C R Naish, A. W N Oatway, R A Palmer, T P Pattinson, J P Paul, J A Peters, C M. Phillips, J S Pippard, E C Poulton, J R K Preedy, E J T Prettejohn, P M M Pritchard, S H Purser, J F P Quinton, P K Renshaw, D Rice, A J Rook H M J Rowan, J H B M Rowlands, J G Salter D L Sandes, T O Scudamore, D S Short, E G Sita, J F P Skrimshire J L S Smith, J B Stanton J O Swanson, R. D Sweet, H D Teare, J R. Thompson, J K Wagstaff, R J Walker J C Waterlow R B Welbourn, J C N Westwood, G Wetherley-Mein, R H Wheeler, R U Whitney, J J Wild, D Williams, H I Winner, J F R Withycombe, and J B Wyon

University of Birmingham

At a congregation on July 4 the honorary degree of doctor of laws was conferred on Dr Stanley Barnes

The following degrees were also conferred

M.D —G S Hall
M.B, B Ch —W H Bond and J C Fulford (with first-class honours), A. W Blackwell B T Davis, G M Holme and Elizabeth A Johnson (with second class honours), J W. Abbiss, Margaret R D Banks, Winifred M. Biddle, Jean S I. Brown, G B Cliff, Margaret I Coghill Christine M Edmonds, Margaret S Garden Lilian M A George, J T A George, Elizabeth J F Heynemann, Basil Hyde, D H Joseph A. C Kendall, J. E Kerton, Jean D MacArthur, D M McDonald Mary P McHugh, D J S McIlveen, T A Phillips, M C Platten P F Rudd, D C Sachdeva, P R Sondhi, P R Stephens, J M Stuart, H O Thomas, R S Thorpe and Alan Watson Jones

University of Manchester

At recent examinations the following were successful —

M D —J R Wardley

FINAL EXAMINATION FOR M B, CH B

Alice Akred, Geoffrey Ashe, A N Ashworth, Pauline Blockey, Harold Bolton, H A Boydell, *D M Brierley, *W E Broughton, Philip Cliff, J G Coburn, D G Crawshaw Betty J Dakin, Sheila Egan Douglas Eglin Kenneth Heap Dorothy Hey, Esther Jackson, W H Lonsdale R L Lunt J K. McMyn, C W Marsden, R W T. Mason, Ethel J Samuel, H F Smith †S W Stanbury, O C Sugden, David Sutton Mark Swerdlow, R H Townshend, Margaret Wade *A E Wall H C Warrington, and J K. Wright

* With second class honours † With first class honours

University of Glasgow

On June 26 the following degrees were conferred —

M.D —A G Fergusson (with commendation), A R Hunter, and B T Mann (in absentia)

Royal College of Surgeons of England

Election to the Council —On July 2 three fellows were elected to fill the vacancies caused by the retirement of Mr Hey Groves, Professor Grey Turner, and Sir Hugh Lett The result of the poll was as follows —

	Votes
Hugh Cairns (Oxford)	502
G Grey Turner (British Postgraduate Medical School)	495
Sir Hugh Lett (London Hospital)	399
Lambert Rogers (Cardiff)	383
P H Mitchiner (St Thomas's)	342
Sir Harold Gillies (Bart's)	296
L R Broster (Charing Cross)	212
Sir Lancelot Barrington Ward (Gt Ormond Street)	180
C A Pannett (St Mary's)	143

In all 1143 fellows voted, in addition 17 votes were found to be invalid Cairns, Turner, and Lett are all elected for the full period of eight years

Society of Apothecaries of London

The diploma of the society has been granted to the following —

L D Miller, N F Murphy, C J O Taylor J T Wild, G E Barnard, P R Green, M M El Badri, H G King, C Faies, S B Nelles, M Fishman, Pak So and D I Fullerton

University of Dublin

On July 1, at the school of physic, Trinity, the following degrees were conferred

M D—C G Ambrose J E C Cherry, W A Gillespie M A Majekodunmi, Isabella M Murphy and W F Rogers

M B, B Ch, B A O—J M T Adamson J E Adamson, P St G Anderson, Violet K St G Breakey, R B Brenan, Franziska G Brill D M Brooks Helen U Croasdaile, J F Dignan, J B FitzSimons J P Hearne, W J C Hill, E K Holland, A M Jacobson, H H B Lamb, Dorothy W M Last, Margaret E McClelland Joseph McNutt, W B Martin, J J Musgrave, E S Odbert Samuel Potgieter, A W Pringle, R C Rylance, Heinz Schever, K M Shaw, I I Shribman, S B Stein, F S Stewart and W J W Wolfe

Medical Society of London

On Monday, July 13, at 5 P M, Dr Anthony Feiling will deliver his first Lettsomian lecture at 11, Chandos Street, W 1 His subject will be epilepsy and further lectures will be given on July 20 and 27

Medical Honour

The George medal has been awarded to Acting Squadron Leader Robert Hill MB, RAFVR

One night in March two aircraft, carrying bombs, collided on an aerodrome in Malta and burst into flames Shortly afterwards the bombs began to explode and enemy aircraft began to bomb the area Despite the great danger Squadron Leader Hill, helped by another officer and two airmen, successfully extricated four members of the crews from the wreckage Their prompt and gallant action undoubtedly saved the four lives Squadron-Leader Hill has invariably performed exemplary work in dealing with casualties during heavy bombing raids and has set a magnificent example which has done much to maintain a high standard of morale on the station

Priority Milk

The following addition has been made to the list of conditions for which a priority ration of milk may be claimed

Patients with malignant disease, or lymphadenoma or leukæmia undergoing radiotherapy, whether by means of X ray or radium, and who as a reaction to the therapy have difficulty in swallowing or digestive disturbances such as anorexia or vomiting

These patients will be classed 1 (h) in the schedule of diseases and will be entitled to a maximum ration of two pints of milk daily

Royal Society of Medicine

The sections of laryngology and otology will hold their combined summer meeting at the Radcliffe Infirmary, Oxford, on Friday, July 17 At 10 A M, Prof W E Le Gros Clark and Mr C H Hallpike will open a discussion on the central connexions of the eighth nerve Afterwards Prof H W Florey will read a paper on the possible uses of penicillin and Mr R G Macbeth will describe cases of cortical mastoidectomy treated by penicillin irrigations At 2 30 P M, there will be a discussion on fractures of the skull involving the ethmoid and frontal sinuses at which the opening speakers will be Major C A Calvert and Brigadier Hugh Cairns Prof H J Seddon will also speak on regeneration of peripheral nerves

Free Travel for Cancer Patients

At a meeting on June 23 the executive committee of the Cancer Control Organisation for Edinburgh and South East Scotland decided to ask practitioners to make fuller use of the organisation's system of free travel vouchers to enable patients suffering or suspected to be suffering from malignant disease to attend at Edinburgh Royal Infirmary for treatment or examination. The hon. treasurer of the organisation is Prof William Annan, CA, 22 Charlotte Square, Edinburgh

Epsom College

The council have available for orphan daughters o practitioners St Anne's scholarships and Squire scholarships Candidates for the St Anne's must b daughters, fully nine years of age, of medical men been in independent practice in England or Wales fo than five years No such restrictions are laid dow Squire Sprigge scholarships The value of each s is dependent upon the means of the applicant and th and fees of the school selected Forms of applic be obtained from the secretary's office, Epsom Colleg

Scottish Society for Mental Hygiene

The lack of institutional accommodation for ment ives and the treatment of psychoneurosis among me the Services were among the topics discussed on J the annual meeting in Glasgow of the society It w that the prewar inadequacy of institutions for m fectives had become more acute Dr Constance secretary of the association, read a report by Pro Drever, DPhil, on psychological tests in the Ar pointed out that elimination of unsuitable people place at two stages—at the recruiting board, or at tributing depot where the men were first sent All entering the Army were thoroughly examined, me well as physically, and the unfit rejected Dr W M spoke of recent developments in the treatment o neurosis among Service patients, but Dr David contended that there was not nearly enough provis for men discharged from the Army There wa agreement about the importance of preventing u recruits from joining the Army and of doing all possible to restore mental balance before sending m the Services to civil life

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The fact that goods made of raw materials supply owing to war conditions are advertised paper should not be taken as an indication that necessarily available for export

Appointments

Allen, W H E, MRCS RSO at Hampshire Count Hospital, Winchester

Couts, Ben, MB GLASG, DPH temp TO for Cambridge

Dowes, Anne, MB DUBL resident maternity and child w at Glenroyd Emergency Maternity Home, Blackpool

Hopper, Mary C, MB LOND deputy medical superintend South Middlesex Fever and Emergency Hospital

Imrie, C Gray, MD WESTERN UNIV ONTARIO, FRCP hon physician to the Rampton State Institution, Retford

Madigan, A P, MB DUBL, DPH asst MO for Roya Counties Institution, Colchester

Thomas E G MRCS temp junior MO at Broadmoor Lunatic Asylum

Wilson, Henry, MD CAMB, MRCP psychiatrist to th Hospital

Births, Marriages and Deaths

BIRTHS

Benison—On May 19, in London, Dr Eileen Beni Major R L Benison, R A M C—a son

Campbell Ferguson—On June 29, at Royston, Herts, t Dr C H Campbell Ferguson—a daughter

Hammond—On June 30, at Hawkhurst, the wife o J A J Hammond, RAMC—a son

Porter—On June 28, at Oxford, the wife of Major R RAMC—a daughter

Reid—On June 27, at Nottingham, the wife of Major J FRCS RAMC—a daughter

Sheffield—On June 28, at Cosham, Hants, the wife o Dennis Sheffield RAMC—a daughter

Ström Olsen—On July 4 at Runwell, Essex, the wife Ström Olsen—a son

MARRIAGES

Miller—Baird—On June 19 at Cambridge, Henry Geo MRCP flight lieutenant RAFVR, to Eileen Cathcart B

Hope—Powell—On June 27, at Yetminster, Eusta Hope, MB, to Catharine Anne Powell

Page—Lewis—On June 27, at Hertford, Lawrence Page Bovingdon Herts, to Aldwyth Lewis of Risca, Monm

Murchison—West—On June 27 at Minterne, Dorset, E Murchison, surgeon lieut commander, RN, to Audrey West

Suckling—Silberbauer—On June 20 at Cape To Vincent Suckling, MB, flight lieutenant RAFVR, Silberbauer

DEATHS

Lavie—On July 1 Tudor Germain Lavie MRCS, colonel aged 80

Mosse—On June 30 Herbert Ryding Mosse MD DURH o Garth, Aldwick Bognor Regis aged 84 years

Sturrock—On June 29, at Oxford, William Duncan DSO, DM OXFD

EPIDEMIOLOGY OF JUVENILE RHEUMATISM *

J N MORRIS, M.A GLASG, M R.C P, D C H
CAPTAIN R.A.M.C, LATE PHYSICIAN TO NOTTINGHAM CITY COUNCIL
RICHARD M. TITMUSS

JUVENILE rheumatism is the least known of the great infectious diseases The cause is obscure, the diagnosis often doubtful and the treatment symptomatic Incidence and mortality are equally uncertain The peculiar natural history of the disease and the lack of adequate statistics make the incidence difficult to estimate For knowledge of the mortality we are largely dependent on the Registrar-General's reports, and they are not directly concerned with rheumatism as a cause of heart disease These aspects of the epidemiology of juvenile rheumatism will be considered in the first part of our paper The immediate infective agent of the disease is still undefined but much information has accumulated on the predisposing factors In America, hereditary influences are increasingly stressed, in this country the malady has long been recognised as one of the group of social diseases Observations are recorded in this paper on some aspects of the social background of the disease which hitherto appear to have escaped attention

RHEUMATIC INFECTION

Several attempts have been made to measure the prevalence of the infection

The Ministry of Health report on acute rheumatism (1927) estimated that 2% of the elementary-school population "in cities and towns require observation on account of manifestations of rheumatic infection" Among insured adults a previous investigation (1924) found that the annual attack-rate for acute and subacute rheumatism was approximately 4 5 per 1000, and that 2 5% of all sickness absence was due to rheumatic conditions Davidson and Duthie (1938) on the basis of a large sample study suggested that the annual rate for the whole population of Scotland was 6 5 per 1000 The disease seems to be declining in severity and commonness (Close 1930, Miller 1937) though Thornton (1938) estimated that in the LCC area the incidence in elementary-school children was still 2 5%

Mortality from rheumatic fever has been falling with temporary interruptions for many years In 1881–90 the rate per million living at all ages was 95, in 1911–20 it was 50, in 1939 it was 25 But rheumatic fever is important only in childhood The trend here has not been so satisfactory At five to ten and ten to fifteen years mortality in 1881–90 was 67 and 103, in 1911–20 the corresponding rates were 62 and 86, and in 1936–38 they were 50 and 60

RHEUMATIC HEART DISEASE

Mortality —Glover (1927) estimated an annual total for England and Wales of 25,000 deaths from rheumatic heart disease Miller (1928) suggested 20,000 Wilkinson in 1935 quoted figures as high as 30,000, as low as 12,000 The difficulty arises because the International List, which is used in vital statistics, classifies deaths from heart disease almost entirely by anatomical lesions, and ætiology is not directly considered (Paul 1930, Hedley 1936) Clinical experience must therefore determine the rheumatic proportion of these deaths, and various series of cases (Grant 1933, Wyckoff and Lingg 1926 and others) are available which indicate the age distribution of the different ætiological types Of Grant's 1000 ex-soldiers with heart disease, the rheumatic group was approximately 80% of the total in the twenties, 65% in the thirties, 28% in the forties and 18% in the fifties In Wyckoff and Lingg's series of New York clinic and private patients about 9% of the cases between fifty and fifty-nine years and 4% of those over sixty years were rheumatic Such percentages could be considered, by analogy, the rheumatic fraction of all cardiac deaths in the decade specified, though there are obvious sources of error in such a method A check is provided by information on the expectation of life in patients with rheumatic heart disease In De Graff and Lingg's adult cases (1935) the average age of death was thirty-three, of Coomb's (1924) English series only 7% reached the age of fifty Hedley (1940) in a large-scale investigation found that more than 50% of the deaths occurred under thirty years and only 3% over sixty In New York (Swift 1940), where practitioners are now requested to specify rheumatism when applicable in deaths from heart disease, 40% of the cases so reported in 1938 were under thirty, 44% between thirty and sixty

In view of the nature of such data, any estimate of mortality from rheumatic heart disease is bound to be rather speculative. We are therefore diffident in criticising the figures mentioned above; but they seem to us too high The clinical evidence available suggests that the mortality was nearer 10,000 in 1938 and 11,000 in 1930 Since the total number of deaths from heart disease under forty-five in these years was 6722 and 7434, the current concept of the age-incidence of juvenile rheumatism must be erroneous if the higher estimates of 25,000 and 30,000 are more correct.

Rheumatism thus now causes about 10% of all deaths from heart disease, and close on 100% of those occurring under forty. Combining rheumatic fever, chorea and rheumatic heart disease, juvenile rheumatism is responsible for approximately 2% of all deaths in England and Wales, and for 10% between five and forty-five, when it is second only in females to phthisis, and follows phthisis and violence in males

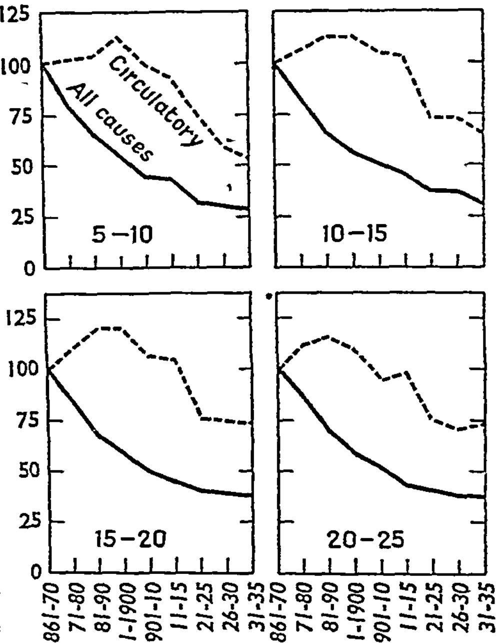

Fig 1
Recent course of mortality from diseases of the circulatory system excluding the war periods the rate for 1861–70 is arbitrarily taken as 100 Male and female rates combined

The total estimates just reached are so hypothetical that to judge mortality trends from a series of such would be pointless Instead we have used all diseases of the circulatory system at five to twenty-five—a crude but adequate index. Fig 1 shows a rather unsatisfactory course up to the 1914–18 war Mortality during the 1920s was however at a considerably lower level In adolescents and young adults the second retardation in the 1920s and 1930s is rather reminiscent of recent experience in phthisis Since 1937 there has been a general improvement

Incidence —Once again we are obliged to piece together scattered bits of evidence

Routine school inspection in recent years (Health of the School Child 1938) has shown that just over 5 children per 1000, or less than 30,000 in all, have organic heart disease In London Thornton (1938) reported the incidence as 2% in 1926 and 0 8% in 1936 In adults it is impossible to state the incidence with any accuracy Among insured workers the report on incapacitating sickness (Edinburgh 1939) showed that under the age of thirty-five the number of new cases of heart disease per annum was about 2 per 1000 in men, just under 3 in single women, and just over 3 in married women In these groups the number ill of heart disease over the whole year was 0 12 per 1000, 0 35 and 0 41 Berkeley, Bonney and MacLeod (1938) indicate that 1–2 5% of all pregnant women have rheumatic heart disease Periodic health examinations are rare in this country. one of us (Morris 1941) found the incidence to be 1% in a sample of 1352 adult males Another source of information is De Graff and Ling's (1935) series where fifteen years was the average between onset of the disease and final heart-failure On the number of adult deaths already estimated, there appear to be 125,000–150,000 cases in England and Wales Paul (1930) in his survey of the whole subject considered the incidence to be approximately 8·4 per 1000

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* Part of this paper was read at a meeting of the Committee for the Study of Social Medicine

From a consideration of the available evidence it can be hazarded that there are nearly 200,000 cases of rheumatic heart disease at all ages in this country This probably gives juvenile rheumatism the melancholy distinction of being first among all infections as a cause of chronic illness and disablement, chronic, but punctuated with frequent acuter episodes and occurring almost entirely in what should be the most useful years of life.

THE SOCIAL FACTOR

Juvenile rheumatism has long been known to be more prevalent—Glover (1930) suggests 30 times more—among the poor than the well-to-do The British Medical Association committee (Miller 1926) and the Medical Research Council special report (1927), however, agreed with some earlier authorities and suggested that the incidence was more selective, being higher in the artisan class than among the very poor This is an observation of great interest, and has been variously explained by Miller (1934b), Wilkinson (1935) and Poynton (1938) It has, of course, also been disputed—e.g, by Hill (1930), Glover (1934) and in the reports of the Kensington Rheumatism Scheme

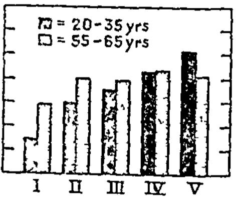

Fig 2—Male mortality ratios (1930–32) from valvular heart disease and chronic endocarditis in different social groups graded from I to V (see text) The rate for all classes is taken as 100 in each age group

In the Occupational Mortality Supplements—those little-worked goldmines—the Registrar-General classifies deaths according to the occupational (and thus social and economic) status of the dead He uses five classes, I, the upper professional and managerial strata, II, the lesser employers, managers and professions; III, the skilled and blackcoated workers, IV, semi-skilled, including agricultural workers, V, unskilled labourers Unfortunately for our purpose here, social class ratios are presented only for age-groups of twenty and upwards Those (1930–32) for rheumatic fever seem to offer some support for the artisan theory, in age-group twenty to thirty-five the ratios are · 108 for classes I and II, 100 for class III, 106 for class IV, and 84 for class V But these will not be further discussed, because rheumatic fever is important only in childhood Several types of heart disease are graded, and chronic endocarditis and valvular disease correspond most closely to the rheumatic group Fig 2 shows a steep rise in mortality with decline in social status, at twenty to thirty-five years the deaths in class V are some 400% of class I.

TABLE I—SOCIAL CLASS MORTALITY RATIOS FOR VALVULAR HEART DISEASE AND CHRONIC ENDOCARDITIS

Males, 20–45 years Standardised, the rate for all males is taken as 100

Social class	1910–12	1921–23	1930–32
	%	%	%
I & II	83	79	72
III	87	92	93
IV & V	119	119	121
Excess of classes IV & V over classes I & II	143	150	168

This diagram represents the closest approximation possible of the social class mortality from rheumatic heart disease In middle age the social gradient flattens, till between fifty-five and sixty-five, when other than rheumatic causes are increasingly common, the class V mortality is not greatly in excess of that for class I Occupational risks in themselves are not important, the

TABLE II—REGIONAL ANALYSIS OF MORTALITY FROM HEART DISEASE IN YOUNG PEOPLE (per 100,000 living)

Region	1931–35 (ages 5–15)	1930–32 (ages 15–25)		Region	1931–35 (ages 5–15)	1930–32 (ages 15–25)	
	M & F combined	M	F		M & F combined	M	F
England and Wales	11	19	23	M1	10	19	23
				M2	11	18	23
London	11*	21†	29†	E	6	12	11
SE	6	14†	17†	SW	7	12	16
N1	12	24	26	W1	19	35	36
N2	12	16	21	W2	9	15	33
N3	14	22	27				
N4	14	20	29				

* Greater London, † Administrative London

Regions—SE = south east England, excluding London N1 = Northumberland and Durham N2 = Northern rural belt N3 = West Riding N4 = Lancashire and Cheshire M1 = West Midlands M2 = East Midlands E = Eastern Counties SW = South-Western Counties W1 = South Wales, W2 = North and Central Wales Short descriptions all taken from the *Home Market*

ratios for married women are almost the same as those for men The social class gradient is not a new phenomenon calculations based on material in previous supplements permit the comparison for age-group twenty to forty-five seen in table I It may be noted that the excess of classes IV and V over class III has not altered much but their excess over class I has actually risen since 1910–12 There is no evidence here in favour of the artisan's disease theory, in so far as deaths from rheumatic heart disease can be considered an index of juvenile rheumatism the findings are very different

SOCIAL CLIMATE

The death-rates already cited are averages of England and Wales and include urban and rural, industrial and agricultural experience The averages are thus made up from widely differing areas ranging from South West England to the North-East and from Greater London to North and Central Wales. Clearly it is necessary to examine the incidence of juvenile rheumatism in such different settings The study of these—the social geography of England and Wales—was much simplified when, in 1931, the Registrar-General divided the country into 12 major social and economic regions which bear much more relation to the realities of the social structure of the country than the older administrative divisions into counties, boroughs and districts, with their artificial aggregation into North, Midland, South and Wales groups During the 1930s, for example, the South-East, Greater London, the South-West and the East were relatively prosperous with a low average of unemployment South Wales (coal-mining), the North-East (heavy industry) and Lancashire (cotton) were all abnormally depressed with excessive unemployment rates Between these economic extremes were the industrial Midland counties and the largely agricultural regions of North Wales, Westmorland and the North and East Ridings of Yorkshire Such environmental factors can now be observed operating on a large scale and significant local differences need no longer be lost in national averages

TABLE III—REGIONAL ANALYSIS OF MORTALITY FROM RHEUMATIC FEVER, 1926–30 (per 100,000 living)

Age group 5–15 years

Region	Boys	Girls
England and Wales	6 9	8 3
North	6 7	8 1
South	4 9	5 3
Wales	8 6	10 1

In tables II and III the regions have been used to construct rheumatism maps Table II analyses the mortality from heart disease for ages five to twenty-five, the most rheumatic (in our sense) decades, hereafter heart disease in this age-group will be termed "(rheu atic) heart disease" The rates for South-East England, South-West and the Eastern Counties are low, or London and the Midlands about average for the ndustrial North rather high, and for South Wales hroughout in excess of all other regions In 1930 the Registrar-General stopped listing rheumatic fever in his short tables Mortality cannot therefore be analysed by he new regions, table III uses the older groupings and hows again a very high Welsh rate

The regional differences in mortality can be expressed n another way—as percentages of the national figure aken as 100 This is done in fig 3 for girls between ive and fifteen The ratios are also shown for two other ocial indices The range between high and low is greater for (rheumatic) heart disease than for phthisis in young women, or for infantile mortality [1]

The natural climatic factors in themselves seem to be unimportant, as the Registrar-General has pointed out, he climate in South-East and South-West England and n South Wales is very similar Low-lying and wet East England had the best rate of all Stevenson (1919) noted this in the decennial supplement for 1901–10 Discussing mortality from "rheumatic fever and heumatism of the heart" he wrote that the "Fen ounties return low rates, but the idea of any pecial association with damp appears to be given up" he mills of God grind slowly

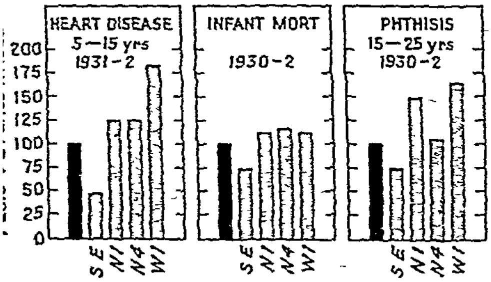

Fig 3 Female mortality from heart disease infantile ailments and phthisis analysed according to regions

In 1901–10 mortality at all ages for "rheumatic fever nd rheumatism of the heart" showed similar trends with high rates in the north of England and in Wales The figures for rheumatic fever in children, 1911–20, likewise closely resemble those found in later years In 1936–39 there was an all-round improvement but the glaring regional disparities remained (see also Young 1921, 1925)

TOWN AND COUNTRY

Since Newsholme (1895) emphasised the influence of urbanisation in juvenile rheumatism this factor has been more or less taken for granted, and relatively little attention has been paid to it Various investigators have found the incidence greater in the town than in the country Fig 4 illustrates the general effect of urbanisation on mortality from rheumatic fever and heart disease n childhood The trend is quite clear in both and the gradation is steady, mortality rises with increasing density of population

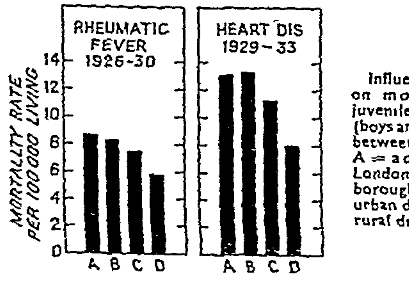

Fig 4 Influence of town life on mortality from juvenile rheumatism (boys and girls combined) between 5 and 15 years A = administrative London B = all county boroughs C = all other urban districts D = all rural districts

The regional break-up of these national figures is once more illuminating Fig 5 shows the mortality-rates for rheumatic fever in boys and girls in the regions used by the Registrar-General before 1931 It can be seen that there is a trend in the expected direction, though it is not very pronounced, in all three divisions Table IV makes the same analysis for heart disease in children, boys and girls combined, in the Registrar-General's social regions (The pattern is identical in young adults, both men and women, but we have presented only the children's table, as internal migration may have complicated the picture at fifteen to twenty-five years.)

TABLE IV

INFLUENCE OF TOWN LIFE REGIONAL ANALYSIS, 1929–33

Mortality from heart disease at 5–15 years per 100,000 living Boys and girls combined

Population density	N1	N2	N3	N4	M1	M2	E	SE *	SW	W1	W2
County boroughs	10 3	14 4	13 8	15 1	12 7	14 5	9 9	11 5	10 4	17 9	
Urban districts	12 5	13 6	11 7	12 5	12 8	13 4	6 9	8 3	7 6	20 1	6 8
Rural districts	11 7	6 5	12 3	9 4	6 5	11	3 9	5 1	4 9	18 8	9 3

* Excluding administrative London

Most of the individual regions show the same unmistakable rise in mortality with increasing urbanisation as was found in all England and Wales, in the North-East and the West Riding the rural rate was about the same as the urban, in Wales it was worse. It is true that the North-East contains some large mining communities anachronistically labelled rural, but in a discussion of density per acre there is no comparing these with the highly urbanised county boroughs such as Newcastle, Sunderland, Leeds, Sheffield or Bradford

When next the factor of urbanisation is kept constant and areas of similar density are compared definite discrepancies are discovered The wide range between the best and worst in all three categories suggests that density of population is not the key factor, and that powerful influences other than urbanisation are operating At each level, the highest rates are found in South Wales and North England But the most interesting feature of this regional layout is that mortality from rheumatic fever was greater in the Welsh rural districts than in the urban areas of the whole country (fig 5) or of the North or South, and in the same way mortality from (rheumatic) heart disease was higher in the villages of South Wales than in all the big towns grouped nationally or regionally We can therefore conclude that whilst urbanisation is an unfavourable influence it is not nearly so decisive as is commonly supposed

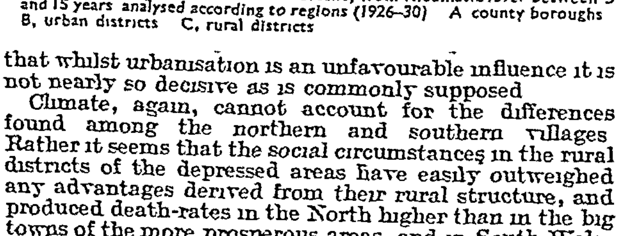

Fig 5—Influence of town life on the mortality from rheumatic fever between 5 and 15 years analysed according to regions (1926–30) A county boroughs B, urban districts C, rural districts

Climate, again, cannot account for the differences found among the northern and southern villages Rather it seems that the social circumstances in the rural districts of the depressed areas have easily outweighed any advantages derived from their rural structure, and produced death-rates in the North higher than in the big towns of the more prosperous areas, and in South Wales higher than in the worst of the big towns In this connexion it may be mentioned that Danischewsky (quoted by Glover 1930), discussing the high incidence of acute rheumatism in Moscow, noted that it was still greater in the agricultural villages around the town

Juvenile rheumatism is not the sole instance where the rôle of urbanisation has been overrated In infantile mortality and tuberculosis of young people, for example, the same distribution holds, and the rural districts of the North and Wales register higher mortalities than the much more densely populated cities of other parts of the country found the incidence to be 1% in a sample of 1352 adult males Another source of information is De Graff and Ling's (1935) series where fifteen years was the average between onset of the disease and final heart-failure On the number of adult deaths already estimated, there appear to be 125,000–150,000 cases in England and Wales Paul (1930) in his survey of the whole subject considered the incidence to be approximately *8•4 per 1000*

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[1] For a general discussion of regional mortality see Poverty and Population,' by P M Titmuss London 1938

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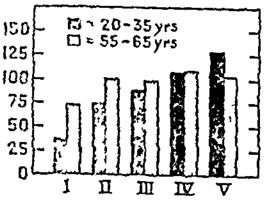

Fig 2—Male mortality ratios *(1930–32) from valvular heart* disease and chronic endocarditis in different social groups graded from I to V (see text) The rate for all classes is taken as 100 in each age group

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TABLE III—REGIONAL ANALYSIS OF MORTALITY FROM RHEUMATIC FEVER, 1926–30 (per 100,000 living)

Age group 5–15 years

Region	Boys	Girls
England and Wales	6·9	8·3
North	6·7	8·1
South	4·9	6·3
Wales	8·6	10·1

In tables II and III the regions have been used to construct rheumatism maps Table II analyses the mortality from heart disease for ages five to twenty-five, the most rheumatic (in our sense) decades, hereafter heart disease in this age-group will be termed "(rheu-lay almost as important unfavourable rôles in hot as in old climates "

The upshot seems to be that all these factors, damp and crowding, malnutrition and fatigue, lack of sunshine and holidays, inferior medical care, inadequate clothing and leaky boots are responsible—the whole life of the underprivileged child "The destruction of the poor is their poverty" In social medicine such multiple non-specific causation is not unexpected The first stage in this long history may well be a child constitutionally predisposed to rheumatism On the whole question of inheritance there is little substantial evidence In any case, the disease is seen to be so sensitive to social inequality that emphasis on hereditary influences is premature

We have been able to touch on only a few of the problems involved It is still true as in 1927, when Newman wrote, that "no field of preventive medicine offers larger scope for scientific and social investigation than acute rheumatism "

SUMMARY AND CONCLUSIONS

The morbidity and mortality of juvenile rheumatism have been examined with special reference to the social background of the disease

Among infections in this country juvenile rheumatism is probably the greatest cause of sickness and disablement It causes 2% of all deaths in England and Wales, 10% of all between five and forty-five Mortality is declining, though more rapidly in children than young adults Regionally, and in the county boroughs, the death-rate varies widely and rises with the degree of poverty

Mortality on the whole increases with the density of population; this seems to be a function of the greater poverty in the towns The depressed rural districts return rates as high as the worst of the big towns

No evidence was found to suggest that the artisan stratum is particularly prone to the disease Climate seems of little importance Correlation with overcrowding was inconclusive

The facts elucidated strengthen the view that the whole complex of poverty is involved in the production of juvenile rheumatism

We are obliged to Dr J A. Glover and Lieut Colonel M L Rosenheim for their comments on the paper and to Dr Percy Stocks for the 1939 figures

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TEMPORARY LENS CHANGES IN DIABETIC COMA

AND OTHER DEHYDRATIONS

R D LAWRENCE, M D ABERD, F R C P

WILFRID OAKLEY
M D CAMB, F R C P

I C BARNES
M B LOND

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WE have recently observed that temporary changes in the lens are constantly visible in cases of diabetic coma accompanied by severe dehydration, and have also noticed similar transient changes during dehydration in 2 non-diabetic patients Comparable changes, have been produced experimentally in animals by osmotic disturbances (Duke-Elder 1940)—for instance, the subcutaneous injection of 0 25 g sodium chloride into a frog makes the lens opaque and this opacity rapidly disappears on plunging the frog into water As far as we know, this phenomenon has not been recorded in the human eye except in connexion with the intense dehydration of cholera (Duke-Elder 1940) and nowhere in detail This is not surprising as the treatment of dehydration calls neither for the opinion of an ophthalmologist nor any examination of the eye, other than digital impression of its tension One of us (R D L) noticed these curious eye changes in a case of profound diabetic coma some 10 years ago, but it was not until we have recently made a routine examination of the lens in such cases that we became aware of their frequency Our examinations have consisted merely in direct ophthalmoscopy using a +12 to a + 20 dioptre lens, + 15 usually giving the clearest focus of the opacities So far we have been unable to observe more accurate detail with a slit-lamp, and, with the exception of one case, it has been impossible to assess subjective visual defects in these semiconscious or unconscious patients We have also been unable to obtain the critical cooperation of an expert ophthalmologist in these observations, but this we hope will later be remedied in our own and other cases

The most common change (seen against the red retinal reflex) consists of a wavy gridiron (fig 1) with the lines showing dark against the red background, as if the capsule were wrinkled in folds In some cases, especially in the early phase and during resolution after intravenous saline treatment, no complete pattern has been seen, but only a fine crinkling confined to the periphery (fig 2) or an odd peripheral streak When dehydration has been more severe bolder streaks like water cleavages have been seen (fig 3), and quadrantic patterns (fig 4) showing up darkly against the red retinal reflex and seemingly situated more deeply in the lens In one case only has an opacity complete enough to blot out the retinal reflex been observed, which began at the bottom of the lens and spread upwards (figs 5a and 5b) The changes were not symmetrical in both eyes but were of the same general pattern One case carefully observed by Mr Eric Lyle in 1935 showed a different intensity of pattern at 2-hourly periods of observation in correlation with the degree of dehydration Here the lenses showed linear striation (fig 6a) which became fainter as the dehydration was relieved by intravenous infusion The lens showed only very faint striations 29 hours after admission though small opaque bubbles appeared at the periphery (fig 6b) which persisted until the patient's death 18 hours later

These changes have been observed in 5 out of 6 cases of diabetic coma in the past 3 months—indeed, in all cases that showed severe dehydration The 6th case was complicated by auricular fibrillation and heart-failure and was only slightly dehydrated In all cases the criteria of dehydration were a sunken facies, hæmo-concentration, a systolic blood-pressure under 80 mm Hg and very low eye tension This ocular hypotension was sometimes intense and was measured in similar cases some years ago by Mr G T W Cashell who obtained readings of 5–10 mm Hg (Schiotz method normal 20 mm Hg), figures comparable with the tension after death This shows how intensely the eye suffers in diabetic coma and the amount of water that must be withdrawn from the aqueous, lens and vitreous gel, the last being probably the most concerned in the production of ocular hypotension

MORTALITY IN THE COUNTY BOROUGHS

The death-rates for (rheumatic) heart disease in the county boroughs, then, vary widely To determine what part social factors play in this is not easy In the first place there is no ready-made index which assesses the social status of these towns The levels of unemployment or Poor Law relief are too sensitive to swings of the economic pendulum , Stock's Social Index (1936), which will be used, is not sensitive enough This index is based on the local distribution of the five social classes The proportion in classes IV and V (the male semi-skilled and unskilled workers over 14 years) is taken as a measure of local poverty at the time the returns were made, in 1931 Unfortunately, the allocation to the different classes was based on the normal occupation of the individual when in work No account was taken of unemployment, and consequently the fact that a great number of men and their families had been subjected to a reduction in their standard of living for anything from a few months to many years was not reflected in the social index However, this index is easily the best available In table V the county boroughs are grouped into five grades of diminishing prosperity , group 1 has less than 28% in social classes IV and V, group 5 has over 43% , the remainder are evenly spaced in between The table also shows the death-rates for (rheumatic) heart disease in these county borough groups for the five years 1929–33 The trend is quite clear the rate for the poorest group of towns is considerably worse than for the most prosperous , there is a steady deterioration from grade 1 to grade 5

TABLE V—MORTALITY FROM (RHEUMATIC) HEART DISEASE THE SOCIAL FACTOR IN THE COUNTY BOROUGHS

Mortality from heart disease at 5–25 years per 100,000 living, male and female combined 1929–33

County borough group	No of C B s in group	Proportion per 1000 in social classes IV and V	Death rate from heart disease in young people
1	12	< 283	12 8
2	14	284–333	17 6
3	27	334–383	18 7
4	20	384–433	21 8
5	10	434 +	22 2

OVERCROWDING

The microclimate (Danischewsky's expression) has also been studied Housing is usually implicated in the production of juvenile rheumatism by two factors—damp (e g , Miller 1926) and crowding (e g , Perry and Roberts 1937, Bach et al 1939) On the first of these we have no new observations to offer The degree of overcrowding can be measured both regionally and for the county boroughs from the Ministry of Health Overcrowding Survey The North-East is worst housed by far, being more than twice as crowded as Greater London and four times worse than South Wales Correlation with mortality from juvenile rheumatism is thus not at all close, and is much clearer for infant mortality and the general death-rate in young people The county boroughs were again divided into five groups, according to their degree of crowding Mortality from (rheumatic) heart disease at between five and twenty-five rose steeply from 13 5 per 100,000 living in group 1, with least overcrowding, to 23 2 in group 4, but fell again to 19 5 in group 5—that is, to almost exactly the same rate as in group 3 Again some correlation emerged, but again not a close one These findings may be material to the discussion (MRC Special Report 1927, Wilson 1940) on familial incidence and contagion It is interesting that the reverse was found in phthisis mortality of young people (Hart and Wright 1939) where the correlation with overcrowding was much more obvious than for poverty as such when measured by the Social Index

DISCUSSION

There is general agreement on the broad issue that juvenile rheumatism is intimately related to an unsatisfactory social environment Discussion mostly centres on the view that incidence is not determined by the degree of poverty but is highest in the artisan class, and the existence of some particular poverty factor which is primarily responsible for the disease The approach to these ancient controversies has hitherto been mostly clinical , we have tried the complementary method of statistical analysis which seemed to us more likely to clarify such social medical problems

We have dealt only with mortality statistics for the very good reason that so few others are available , our ignorance of the morbidity of juvenile rheumatism as of many other major disorders is a long-standing complaint which will not be remedied until periodic health examinations of the whole population are instituted Schlesinger (1938) has rightly warned against over-emphasis of the fatal issue in this disease—patients do recover from it, or may lead useful lives in spite of it Mortality does, nevertheless, measure the significance of the condition for the public health, and it sums up the long preceding years of suffering and incapacity The power of the social factor over mortality from juvenile rheumatism seems established, but it may be objected that the findings cannot simply be applied to the related problems of the incidence of the disease This difficulty cannot be fully overcome, but meanwhile analysis of the material suggests that the social factor operates principally by enhancing the infection or lowering resistance to it. The other phase of the disease—the cardiac—does not appear to be so strongly affected neither pregnancy nor occupation, for example, seem to have much influence on the trends which are almost identical for both sexes, for children and young adults Infection dominates the natural history of this disease—the original tonsillitis, the chronic, relapsing, increasingly severe rheumatism itself, the adventitious respiratory catarrhs Throughout, the rôle of the unsatisfactory environment is evident. Coborn (1931) noted that hæmolytic streptococcal throat infections were commoner in the unhygienic living conditions of the poor The class incidence of acute and subacute rheumatism was well illustrated by Still's figures (1927) , and Hedley (1940) suggests that the more severe forms of rheumatic infection are relatively commoner among the very poor Miller (1934a) observed that no rheumatic child living in his own environment is ever free from the danger of relapse , the relationship of respiratory infections with overcrowding need not be discussed The thread of infection that runs through the history suggests that the observations made here on mortality may apply with equal emphasis to the earlier stages of the disease as well

Various field studies—for example, that of the Bristol and Three Counties by Savage in 1931 and the MRC investigation in Glasgow and London in 1927—have analysed poverty in an attempt to discover if any particular constituent was responsible (see also Poynton and Schlesinger 1937) The findings have largely been negative Damp has most persistently been blamed, yet when other conditions are satisfactory, whether in public schools or colonies for mental defectives, there may be little or no rheumatism Dutch experience points in the same direction The specific adverse influence of urbanisation is not proven A low standard of living, wherever it occurs, whether in town or village, increases the death-rate from rheumatic fever and rheumatic heart disease But poverty is neither the result nor even the necessary associate of greater population density, and to say urbanisation when we mean poverty is no help to clear thinking Nor do the effects of industrialisation afford an easy explanation That the fathers of these rheumatic children in the Welsh and northern villages may have been employed at one time or another in the mines cannot directly affect the issue and the smoke-laden atmosphere of our cities does not apply here As to overcrowding, our findings have been even less conclusive The concept of a " rheumatic stratum " (Miller 1926), excluding the well-to-do on the one hand and the very poor on the other, received no confirmation Both regionally and in the big towns mortality was seen to rise with the degree of poverty

Climate in this country has little influence The mortality-rates for South-West England and South Wales have already been compared The cont between the rural districts of the north are eq definite It is interesting that increasing doubt is be cast on the supposed immunity of tropical populati Swift (1940) discusses the recent and very equiv literature on this subject He adds the comment " crowding, poor housing and poor nutrition seem

We have never seen any visible lens changes during he temporary disturbances of focus that occur so often n two different phases of diabetes, whereby the acute nset or exacerbations of diabetes are accompanied by nyopia and the removal of sugar through treatment by ntense hypermetropia up to +8 D. Both these phases ast only 3–10 days and disappear in spite of the persistence of the same metabolic condition that initiated the changes. Such visual changes are almost certainly due to osmotic variations, but the media remain clear.

SUMMARY

Cases of temporary lens opacification occurring in association with the severe dehydration of diabetic coma, and also in 2 cases of severe dehydration from other causes, are described.

These lens changes seem to be directly dependent on dehydration and disappear when it is corrected by saline replacement. The part played by such water changes in the production of permanent diabetic cataracts is thought to be important in acute juvenile forms but of doubtful influence in the cataracts which develop in older diabetics.

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MIDDLE MENINGEAL HÆMORRHAGE IN CHILDREN

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THE following 3 cases of bleeding from the middle meningeal artery are reported because of the absence of initial concussion and because of the long latent period before the onset of symptoms. In each case the injury was apparently trivial and was not associated with amnesia. The case-notes demonstrate the necessity for a close watch on any child whose head has been injured, and gives some indication of the type of case in which compression is likely to develop. In 2 of the cases irritability and vomiting occurred, 6 hours and 2 hours respectively after the accident; these symptoms may be regarded as an "alert."

CASE-HISTORIES

CASE 1.—A boy, aged 13, was admitted to the Richmond Hospital at midnight on Sept. 20, 1940. At 6 P.M. the previous day he had been hit by a ball on the right side of his head. He was slightly dazed but was able to sit on the crossbar of a bicycle while being taken to a nearby hospital, where a small scalp wound was sutured. During the night he was irritable and vomited several times. On admission to the Richmond Hospital, 30 hours after the accident, he was fully conscious and was able to explain about the accident. He did not complain of headache. On Sept. 21 he was irritable, lying curled up, refusing drinks and resenting examination. Radiological examination of the skull was negative. Next day he had incontinence of urine. Lumbar puncture: clear fluid, pressure 100 mm. of water. On the 23rd, 24th and 25th his condition was unaltered except for a lessening of coöperation with the nursing staff. On the 26th he had a dilated right pupil with sluggish light reflex, left hemiparesis and a left Babinski sign. An operation was performed under local anæsthesia and a large extradural hæmatoma was evacuated. Bleeding from the anterior branch of the artery was controlled by diathermy. Next day his pupils were equal but his clinical condition was not improved. The possibility of a further hæmorrhage was considered and the wound was reopened. This secondary operation revealed the dura up to the bone level, and no fresh hæmorrhage. The dura was opened to allow of a small decompression. A left temporal trephine, performed at the same time, was negative and revealed a shrunken brain. On return to the ward he was given an intravenous drip saline. His condition improved rapidly; the following morning he appeared bright and alert and had no neurological signs. On Nov. 30 he was discharged from hospital. His protracted stay was due to a leak of cerebrospinal fluid from his wound. This probably resulted from reopening the wound and necessitated two plastic operations before it finally healed.

Notable points were the late onset of focal signs, incontinence of urine 3 days after the accident, and the normal pressure of the CSF in the presence of an expanding lesion.

CASE 2.—On the evening of June 22, 1941, a boy of 11 received a blow from a stone on the left side of the head which momentarily dazed him. He was admitted to the district hospital for observation. Reports state that he was conscious on admission and only complained of pain in the left ear, which was bleeding; he was otherwise bright and alert and anxious to be allowed home. On the morning of June 24, 36 hours later, he was found unconscious in bed. Details about the mode of onset of coma were not obtainable. At 3 P.M. he was admitted to the Richmond Hospital. He was then unconscious with a right hemiplegia, a bilateral Babinski sign and a complete left third nerve paralysis. The pulse-rate was 150–160 per min. and blood-pressure 110/70 mm. Hg. Radiological examination demonstrated a vertical fracture extending across the left squamous temporal bone on to the parietal bone. At operation a large extradural hæmatoma was evacuated from the left side, and a bleeding posterior branch of the middle meningeal artery was controlled by diathermy. The dura was seen to be stripped off the bone almost to the middle line, backwards under the parietal bone and to the sphenoidal ridge in front. The wound was closed with drainage leaving this huge cavity between the dura and the bone. On the 25th at 8.10 A.M. he died without regaining consciousness. His fluid intake had been maintained by a pint of citrated blood followed by a continuous drip saline of 5% glucose solution. Autopsy revealed a small tentorial pressure cone, but no fresh hæmorrhage or evidence of re-expansion of the brain.

The points to be noted in this case are the importance of constant supervision, and the futility of operating when the patient's brain has been compressed for such a long time.

CASE 3.—On Nov. 12, 1941, a girl of 6 years fell from a moving bus and was momentarily dazed but was able to walk home, a distance of about 1½ miles. On arriving home she complained of a severe headache, became very irritable and vomited several times. On the 14th, at 11 P.M., on admission to the Richmond Hospital, she appeared normal in every respect. Neurological examination was negative. Radiological examination demonstrated a linear fracture of the right squamous temporal bone. On the 16th at midday, her pulse-rate suddenly dropped from 80 to 64 per min., and the bradycardia was accompanied by a severe frontal headache. Examination demonstrated a hard, non-pulsating swelling in the right temporal region which obliterated the contour of the zygoma. No other clinical abnormality was discovered. At this stage the association of a fracture of the temporal bone with a temporal swelling justified the diagnosis of an intracranial hæmorrhage with some sort of safety-valve mechanism. Under bromethol ('Avertin') anæsthesia, supplemented by local infiltration, the right temporal region was explored through a vertical incision. Retraction of the temporal muscle demonstrated that the squamous bone was bulging outwards, allowing a fringe of hæmatoma to protrude through the avulsed suture line. The bone was opened and a large extradural clot with a bleeding anterior branch of the middle meningeal artery was found. The child made an uneventful recovery and was discharged from hospital three weeks after admission.

An interesting feature of this case is the way in which the expanding hæmorrhage by lifting the bone produced a spontaneous decompression.

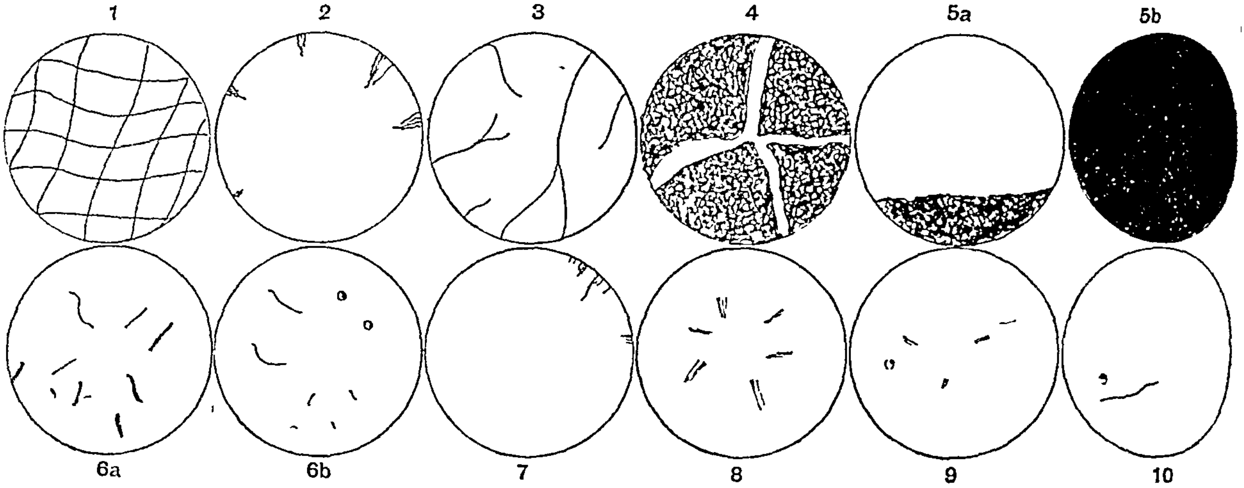
SUMMARY

In three cases of extradural hæmorrhage in children initial concussion and amnesia for the accident were absent in every case. The first sign of an intracranial lesion in 2 of the cases was vomiting with irritability. These phenomena may indicate the onset of compression of the brain in cases in which there has been no concussion. After definite concussion these symptoms usually indicate a step towards recovery.

In the first case incontinence of urine could be regarded as the first focal sign indicating involvement of the frontal lobe; the next sign was a dilated right pupil. In the second case the first focal sign was probably dilatation of the pupil. In the third no focal signs developed.

I am indebted to Mr A. A. McConnell for permission to treat and publish these cases.

LENS CHANGES IN DIABETIC COMA



The duration of the dehydration necessary to produce visible lens changes is not accurately known as it has been impossible to determine how long it had been present before admission In one case of mental degeneration in which the patient was allowed to go into coma by stopping insulin treatment, the changes were first observed 60 hours after the cessation of insulin and 48 hours after onset of symptoms of dehydration, but were by then relatively advanced (fig 5a), 12 hours later the right lens was completely opaque (fig 5b) and the left showed intense cleavages and was semi-opaque

Another patient, a boy of 14, was admitted in diabetic coma with a fair degree of dehydration and moderately low ocular tension On admission, his right lens showed no changes though fine peripheral crinkling was visible in the left lens capsule (fig 7), 5 hours later, after the administration of two litres of intravenous fluid, both lenses appeared normal, 26 hours after admission, however, all symptoms and signs of dehydration having disappeared, streaky black opacities were seen in both eyes (fig 8) which gave the impression of *permanency*, and, *in contrast to the changes first seen*, appeared to be in the substance of the lens rather than in the capsule After a further 4 hours these had almost disappeared, only a few fine etchings being present in both lenses (fig 9), while 3 hours later—33 hours after admission—the right lens was again normal and the left showed only one bubble and one small cleavage line (fig 10) The boy, who was conscious throughout, did not complain of any alteration in sight, and in spite of the presence of the changes depicted in fig 8 could read a book without discomfort

We have observed similar lens changes in 2 non-diabetic patients with severe dehydration, caused in one by the vomiting of intestinal obstruction and in the other by an exacerbation of chronic ulcerative colitis We should expect it to occur in severe diarrhœa and vomiting in infants but have not had the opportunity of examining any such cases

DISCUSSION

We think the basis of these changes is clear, and that their development depends on dehydration and their disappearance on rehydration It is interesting to discuss the phenomenon, especially in relation to the permanent cataracts that develop in diabetics The chemical composition of the lens substance and the processes regulating and stabilising its osmotic composition are not fully understood, but it is certain that the capsule is permeable to diffusible substances such as water, salts and sugar, and that the lens matrix contains free water as well as water fixed to the protein colloids When the blood and subsequently the aqueous is dehydrated, the free water will ultimately diffuse out of the lens so that the lens substance is reduced in bulk and the capsule becomes wrinkled, the earliest and most typical appearance seen Besides this there is probably some opacifying change in the lens fibres themselves to produce such an appearance as seen in figs 4, 5a and 5b These changes are reversible if the water is rapidly replaced and the lens clears up completely But if the water of hydration of the colloids is sufficiently interfered with and the protein coagulated, the process is irreversible and *the opacities are permanent* This process perhaps throws light on the production of diabetic cataracts, which are of two types

Acute cataracts are rare and occur almost entirely in young diabetics They develop rapidly and opacity may become very dense within a few days The lesions are said occasionally to be reversible if treatment is rapid (Joslin 1940) but all those we have seen have been permanent and indeed progressive except in cases of acute dehydration described above Braun (1935), however, describes the complete disappearance of a posterior rosette cataract within 16 days in a boy of 18. We would suggest that these acute cataracts are probably initiated by the type of water disturbance described above, and one of our patients gives a clear history of developing visual defects and cataracts soon after a diabetic coma Yet these acute permanent cataracts are so rare and the occurrence of dehydration so relatively common in the juvenile cases that a higher incidence would be expected if hydration were the only factor involved

Whether the same factor operates in producing the common and slow opacities in elderly diabetics is doubtful Indeed although it has been generally accepted that cataracts are commoner and occur at an earlier age in elderly diabetics than normals, even this is uncertain Waite and Bentham (1935) found the incidence of senile cataracts no greater in 2000 diabetics than in non-diabetics of comparable age-groups and others have come to the same conclusion (Braun 1935) It is therefore uncertain whether the majority of such cataracts are in any direct way connected with the diabetes

Duke-Elder (1940) in discussing the ætiology of diabetic cataracts mentions eight possible factors and appears to think the "hydration of the lens by osmotic influences" the most weighty, but describes a mechanism the exact opposite to that expressed in this paper He argues that, *at least in less severe grades of diabetes*, there is such a loss of salts in the urine that ultimately the aqueous becomes hypotonic and actually gives water into the lens "The lowered osmotic pressure of the aqueous thus determines the inflow of water into the lens, causing, first its deformation and myopia, and eventually the œdema and hydration which results in cataract" We cannot agree with this view and would point out that whenever the diabetes is bad enough to cause thirst tissue dehydration is always present and water will at first be withdrawn from the lens if it suffers any osmotic change at all At other times when the diabetes improves the lens will be rehydrated, and, as years go on, the vicissitudes of the diabetic condition will be accompanied by brief phases of dehydration, rehydration and even occasional superhydration Such changes must cause instability of hydration with possible disturbances of nutrition and structure leading opacification

SULPHANILAMIDE IN TREATMENT OF SMALLPOX

REVIEW OF 103 CASES

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FROM November, 1937, to July 1938, Hong-Kong xperienced the most severe epidemic of smallpox in its istory - Approximately 2000 people died of the disease uring this epidemic, which was characterised by a high ercentage of toxic cases Of the 810 victims of the isease admitted to hospital, 83, or just over 10% of the otal series, were suffering from the toxic form

Before attempting to assess the value of a drug or a ine *of treatment it is necessary to know the natural* istory of the disease being treated Smallpox is a clear-ut example of a diphasic disease, the two phases being he toxic *and the focal phase, and it is unfortunate that* he belief is widely held that the focal lesions are an ssential part of the disease In fact, this is not so They are about as closely related to smallpox proper as is he adenitis seen in the second or third week of scarlet ever to *essential scarlet fever* One has, therefore, in describing the effect of any drug on smallpox, to be at pains to state what type of the disease is being treated and at what stage treatment is begun

The usual course of uncomplicated smallpox left to run ts course untreated is as follows An incubation period of about 12 days is followed by a sudden onset which is usually marked by a rigor or repeated rigors, fever, vomiting, nausea, backache and prostration These symptoms are those of the toxic phase, and if the viru-lence of the causative virus be high all these symptoms are intensified and accompanied by the early appearance of hæmorrhage from the mucosæ and into the skin In the severest cases of toxic smallpox these hæmorrhages dominate the clinical picture As a rule, such patients reach hospital before focal lesions have had time to appear, and as death in this type of the disease usually occurs on or about the 6th day many patients die without showing focal lesions The severity of the disease actually seems to retard the appearance of the focal lesions In the less severe cases the symptoms of the toxic phase begin to abate about the third or fourth day from onset, and this alleviation of symptoms is accompanied by a fall in the fever and the appearance of the exanthem and enanthem, the focal lesions, characteristic of the focal phase of the disease These lesions pass through a regular sequence—macule, papule, vesicle and pustule—and are mature about 8–10 days from the beginning of the focal phase At this stage of the disease the patient often falls a ready prey to secondary septic infections, such as cellulitis, muscle abscess and extensive skin sloughing

One more point must be emphasised it is useless to try to gauge the effect of a remedy on the focal lesions unless the vaccinal history of the patient has been established beyond a peradventure Vaccination exerts such a profound *and long-lasting* effect on both the number and type of the lesions that I have thought it wiser to exclude the vaccinated patients in this group from those in whom the influence of sulphanilamide on the lesions was being observed It must be remembered that vaccinal modification influences the course of the disease in at least three ways—it greatly alters the course of the toxic phase , it lessens the total number of skin lesions , and it shortens and changes the natural maturation of these lesions These three effects of vaccination die out at very different rates, the toxæmia-modifying component disappearing first, the number-modifying component *next and the* type-modifying component last This is why toxic smallpox not uncommonly kills patients who have 6–8 well-foveated vaccinal scars, and it also explains those curious cases *in which an* extremely severe toxic phase is followed by a focal phase producing only 20–30 skin lesions The toxæmia-modifying component of vaccination performed *in* infancy has completely disappeared, let us say by the age of 20 , the patient then develops smallpox and either dies in the toxic phase or survives to show only a few abortive lesions in the focal phase, the other two components still retaining some of their effect These considerations have to be borne in mind both in the prognosis and the treatment of smallpox

The effects of sulphanilamide on both phases of the disease were *observed in a series of* 103 cases Selection, which was at first entirely random, later became specialised to this extent if a patient on admission was *obviously* about to develop some secondary septic complication he tended to be given sulphanilamide because experience rapidly demonstrated that he would probably benefit from the exhibition of the drug

ROUTINE TREATMENT

Sulphanilamide (' Streptocide ' Evans) was given in a dosage of 1 g four-hourly day and night with the necessary modifications for age when children were being treated No loading dose was employed and the drug was invariably given in powder form by mouth It was unnecessary to enforce any special *dietetic* restrictions as the Chinese have the sense to live on a decoction of sugar-cane in water when they are severely stricken with smallpox, and the less severely ill patients could not have obtained eggs and onions had they wanted them Salines were not given to patients receiving the drug. All these patients, save those with toxic smallpox, had their skin lesions painted daily with a saturated solution of potassium permanganate, and their eyes, ears and nostrils treated with 10% ' Argyrol,' glycerin carbolic drops and liquid paraffin respectively, but apart from these no other measures were adopted

RESULTS

Toxic phase —Of the 83 toxic cases in *the whole series* only 2 survived, and both these men belonged to the very small group of toxic cases which has a fighting chance of survival Neither of them had sulphanilamide Of the 13 toxic cases treated with the drug, not one recovered , 10 of them were unvaccinated, 3 showed good vaccinal scars , 12 were admitted *to* hospital *on* or before the sixth day of the disease, the 13th on the seventh On the average these patients were admitted on the fourth day of their illness, and they lived *after* admission for 3½ days on the average One man who had *no* vaccinal scars was exceptional in living for 16 days , he passed out of the toxic phase *and* seemed *likely* to recover, but finally succumbed to the pulmonary œdema which often ends the lives of those toxic patients who linger on

Naturally, *the shortness of the* survival period after admission means that the drug had not long in which to act, but in no case was the natural course of the disease modified in the least by its exhibition, and *it is note-worthy* that the one man in this group *who* lived on for 16 days showed no signs of such modification as a result of treatment It seems, then, judging by this small group of patients, that the drug exerts little if any influence on the toxic phase of the disease

Focal phase, unvaccinated —The remaining 90 patients in this series are divisible into *two* groups—41 who had been vaccinated and 49 who had not The 49 un-vaccinated patients afford reasonable material from which to draw conclusions *about the influence of* sulphanilamide on the focal lesions as they comprised confluent, semi-confluent *and discrete* cases of the disease running an unmodified course In only 19 of these patients was the evolution of the focal lesions changed, the change commonly seen being an arrest of the lesion at the vesicular stage It closely resembled the horn-pock condition so often seen in well-modified smallpox The vesicles, instead of developing into mature pustules, dried up and left the face covered with a multitude of small horny pocks In these 19 cases the secondary focal or septic fever was either annulled or diminished In the remaining 30 cases *in this* group the evolution of the lesions and the course of the disease remained *unaffected*

Focal phase, vaccinated —In this *group of* 41 patients sulphanilamide was used for some septic complication which had arisen during the course of the disease the commonest being boils, muscle abscesses, skin sloughing, cellulitis and otitis media , the rarer ones, panophthalmitis, suppurative arthritis, suppurative periostitis and streptococcal infections of the genito-urinary tract It is in these complications of the focal phase that sulphanilamide proves most useful, and treatment with the drug was not begun in these cases until some septic complica-

INFLUENCE OF THYROTOXICOSIS ON MENSTRUATION

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SCANT attention seems to have been paid to the accurate study of the influence of thyrotoxicosis on menstruation Indeed, misleading views on this subject are common in the standard English textbooks, some of which make the bald statement that thyrotoxicosis tends to produce menorrhagia, whereas in the series of 139 cases analysed below this symptom was present in 2 cases only The cases were all seen at the LCC, Thyroid Unit since its inception in 1932

In general our results correspond closely to those published by Gardiner-Hill and Smith[1, 2] from St Thomas's Hospital The inquiry has been directed towards finding out the effects of thyrotoxicosis on menstruation and the effects of thyroidectomy on the menstrual periods Preliminary attempts were made to classify cases as primary and secondary toxic goitre, but the distinction is not always easy to make and seemed to have no advantages Doubtful and non-toxic cases have been omitted, and so have cases in which other factors were present which might influence menstruation Thus we have not included patients at or near puberty or the menopause, those with a history of recent delivery or abortion, or those who had recently undergone gynæcological operation such as curettage or insertion of radium into the uterus

Grading of cases according to severity makes it easier to appreciate the progressive effects of the disease, and to assess the scope of operation Such grading must of necessity be somewhat elastic, since personal standards vary, but we classified our cases as severe, moderate or mild on the following basis

Severe cases—These, when at complete rest and under treatment with Lugol's iodine, had a persistent tachycardia of 120 per min or over for two days or more after admission The basal metabolic rate (measured by the Benedict Roth method) was +30 or over Severe emaciation, exophthalmos or other toxic signs were present, but the signs and symptoms were not necessarily all present in each case There were 29 cases of this type, with 5 deaths, 2 of which occurred without operation

TABLE I—MENSTRUATION IN 139 CASES OF UNTREATED THYROTOXICOSIS

Group	Menorrhagia	Normal periods	Scanty or irregular periods	Amenorrhœa
Severe	0	8 (27 5%)	4 (14%)	17 (58 5%)
Moderate	2 (3%)	35* (50%)	25 (36%)	8 (11%)
Mild	0	34 (85%)	5 (12 5%)	1 (2 5%)

* One moderate case had menorrhagia before the appearance of the goitre but the periods became normal as the goitre appeared After operation the menorrhagia returned

Moderate cases—Pulse rate (under the same standard conditions) of over 100 and under 120 per min BMR +20 to +30 Moderate toxic symptoms or signs only There were 70 cases in this class with 1 postoperative death

Mild cases—Those not reaching the standards listed above and exhibiting only mild signs or symptoms There were no deaths in 40 cases of this type One case of Riedel's thyroiditis with mild toxic signs is included in this category

The effect of untreated thyrotoxicosis on the periods is summarised in table I

From the figures it seems clear that in mild cases (and probably therefore in the early stages of the disease) there is no effect on the periods, but that as the condition progresses there is an increased tendency towards scanty and irregular periods, and finally more than half the severe cases develop amenorrhœa Often, however, the periods are not in any way affected even in severe thyrotoxicosis These findings agree with those of Joll[3] Menorrhagia is uncommon, its occurrence only in the moderate group suggests that if it does appear it is of only short duration in the natural evolution of the disease, and is probably not a constant accompaniment

Why thyrotoxicosis should cause oligomenorrhœa and amenorrhœa is not certain Whether both conditions are due to some disordered secretion of thyrotropic and gonadotropic hormones of the pituitary has yet to be shown Microscopic study of curettings from the uterus in these patients together with hormone analysis of the blood and urine should give some clue to the extent of activity in the ovaries and pituitary Further research is needed on this problem It did not seem profitable to pursue the study of dysmenorrhœa in these cases, because it seemed no commoner among them than it would be in a similar number of ordinary women

RESULTS OF OPERATION

Accurate notes were available in only 79 cases The possible after effects of operation are

1 No alteration in the periods where these were formerly normal

2 A return to normal after previous disturbance of the cycle—usually only after a latent interval of 3–4 months from the time of operation

3 Abnormal periods of amenorrhœa persisting after operation

4 Periods becoming abnormal after being formerly normal

TABLE II—EFFECT OF THYROIDECTOMY ON MENSTRUATION

Group	Total	Menses			
		Normal throughout	Returned to normal	Abnormality persisted	Became abnormal
Severe	16	7	8	0	1*
Moderate	40	14	20	1	5†
Mild	23	19	2	1	1‡
Total	79	40	30	2	[illegible]

* Developed amenorrhœa
† In 4 periods became irregular and scanty, 1 developed amenorrhœa
‡ Developed menorrhagia

The results in 79 cases are recorded in table II From these relatively small numbers it seems that a woman with scanty or absent periods due to thyrotoxicosis has a 50% chance of her periods returning to normal after operation Occasionally they may be made worse by operation and this is apparently commoner in less severe cases

SUMMARY

Thyrotoxicosis, even when severe, may have no effect on menstruation When it does affect menstruation it tends to produce first scanty periods and then amenorrhœa, which was present in over half the 29 severe cases in a series of 139

Where the periods had become scanty or absent they returned to normal in about half the cases operated on

Menorrhagia is uncommon in thyrotoxicosis and is probably transient when it does appear

We wish to thank the Medical Officer of Health to the LCC for permission to publish this paper, and Dr R H Swindells, medical superintendent of New End Hospital and members of the medical and surgical staff whose cases and notes have been used in preparing this paper

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[1] Gardiner Hill H and Smith, J F *J Obstet Gynæc* 1927, 34, 701

[2] Gardiner Hill, H *Quart J Med* 1928–29, 22, 207

[3] Joll C Diseases of the Thyroid Gland London, 1932, p 40

DEHYDRATION OF FOODS —A joint meeting will be held by the Nutrition Society and the Food Group of the Society of Chemical Industry at BMA House, Tavistock Square, London, W C 1, on Saturday, July 25, at 11 A M, when there will be a conference on the dehydration of foods and its effect on their nutritional value, A later meeting, probably at the end of October, will deal with trace elements in nutrition Further particulars of the Nutrition Society may be had from the hon. secretary, Mr Leslie Harris, DSc, Nutritional Laboratory, Milton Road, Cambridge and then a smaller dose, until a total of 26 5 g had been reached

Chatterjee recorded his experience with sulphanilamide ('Sulphonamide-P') in smallpox in March, 1941 Although he treated only 24 cases of confluent and hæmorrhagic smallpox with the drug, he was satisfied that it was useless in the hæmorrhagic cases but effective in modifying the evolution of the lesions and preventing septic complications Chakrabarty and Ghosh also reported isolated cases of the disease successfully treated with sulphanilamide and sulphapyridine later in the year

Chari in 1942 published a detailed description of the results in 97 cases of smallpox treated with sulphapyridine, sulphanilamide and urea sulphazide All types of the disease were represented in his series His fatality-rates were 24 4% in the unvaccinated patients, 3 7% in the vaccinated ones He concluded that a "sulphonamide" does not abort the disease or do away with the pustular stage even if given earlier, that it is a necessary and valuable drug in the pustular stage of the disease, both for lessening the evil effects of sepsis in the acute stage and for preventing the incidence of late septic manifestations, that it lessens mortality and that it minimises the disfigurement incident to the disease" He is also convinced that sulphapyridine is the most useful drug of the group in this disease

This brief review of the published work shows that all observers are agreed on two points first, that the sulphonamides exert no influence on the virus of smallpox, and therefore do nothing to modify the toxic phase of the disease, second, that they are of very great value in the treatment of the septic complications so common in the focal phase Whether they can or cannot abort the evolution of lesions is still a moot point though the consensus of opinion is that they cannot There is also general agreement that the sulphonamides, used in the septic confluent cases and in the septic complications, bring about a reduction of mortality Most observers consider that their use helps in reducing the incidence of septic complications during the focal phase

At the moment, it is safe to say that the sulphonamides may be given with advantage during the focal phase of smallpox, but that they have no influence on the toxic phase

SUMMARY

A review is given of 103 cases of smallpox treated with sulphanilamide by mouth

The drug appears to be without effect on the toxic phase of the disease—that is to say, it has no action on the virus of smallpox

It is capable in a certain number of cases of modifying the skin lesions rather as they are modified by vaccination

It is extremely effective in the treatment of many of the complications associated with the focal phase

There is some evidence that the drug, if given early in the focal phase, may modify the number of the lesions, the incidence of septic complications and the degree of subsequent scarring

The drug reduces the fatality among cases showing septic complications

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Buttle, G A H (1939) *Trans R Soc trop Med Hyg* 33, 40
Chakrabarty, N G (1941) *Indian med Gaz* 76, 220
Chari, N N (1942) *Ibid*, 77, 91
Ghosh, F K (1941) *Ibid*
King, C and Rozario, K A (1938) *Jour R Army med Cps*, 71, 404
McCammon W O (1939) *J Amer med Ass* 112, 1936
Moore, D F (1939) *Trans R Soc trop Med Hyg* 33 40
Patel, T B and Haidu, B F B (1940) *Indian med Gaz* 75, 73
Pierna S (1940) see *J Amer med Ass* 114, 931
Wilkinson, P B (1940) *Caduceus*, 19, 103

NATIONAL BIRTHDAY TRUST FUND —At the annual general meeting of the fund Sir Julien Cahn, the chairman, said that though activities had been curtailed by the war they continued to maintain the headquarters at 57, Lower Belgrave Street, providing accommodation for the Queen's Institute of District Nursing and the College of Midwives The analgesics appeal fund had supplied 50 gas and air machines free to hospitals, and 46 at a nominal charge, 36 of these to district nursing associations The fund had also supplied 48 machines to EMS hospitals The human milk bureau at Queen Charlotte's Hospital was now supplying 48 hospitals all over the country

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QUALITY OF THE NATIONAL LOAF

G N JENKINS, M SC LPOOL, PH D CAMB

E I McDOUGALL
B SC LOND, A I C

P HERBERT
B A CAMB

(Children's Nutrition Council, Cambridge Branch)

WITH the appearance of the national loaf (85% extraction) on the market and its subsequent establishment as the nation's bread in April of this year, the question of a simple method of checking the quality of flour and bread has taken on added importance The properties to be aimed at in the national wheatmeal flour have been set out in the memoranda of the Medical Research Council[1] It should be of 85% extraction and contain as much as possible of the germ and aleurone layer to supply maximum amounts of the B vitamins and of protein of high biological value, and as little of the bran as possible, this last is the most indigestible and least nutritious part of the wheat and imparts the colour, flavour and texture of "wholemeal" preferred by some but disliked by a large proportion of the population One of the objects of restricting the bran to the minimum and recommending an upper limit for the amount of "crude fibre" appears to be to provide a flour which would still be suitable for those for whom a low residue diet has been prescribed

The ash content has hitherto been widely used as the criterion in milling studies on flour, but it is not satisfactory for application to national flour since the ash contents of the germ, aleurone layer and bran are all high[2] and differ but slightly and they therefore give no information as to whether the flour contains the undesirable bran or the highly nutritious fine weatings and germ, furthermore, it could not be applied to bread The crude fibre content is a better criterion and was used in the small survey described below, the aim of which was to gain some idea of how far the fibre content of the national loaf, as sold, conformed with the recommendation of an upper limit of 0 9%, on a 15% moisture basis, for the national flour

METHOD AND FINDINGS

About twenty samples of the national loaf were obtained from towns widely distributed throughout the country by members of the Association of Scientific Workers and the Children's Nutrition Council and others, to whom we wish to record our thanks It was requested that one thick slice be sent from loaves bought over the counter The samples were received between Feb 15 and March 15 The crust was removed and the crumb air-dried overnight, at room temperature, after which it was ground in a coffee mill three times

Two-gramme samples of the dry breadcrumbs were used for the crude-fibre determinations which were carried out by the method of the American Agricultural Chemists,[3] which is also the method used by the American Association of Cereal Chemists[4] for this type of material This method was checked by determining the crude-fibre content of a few samples not included in the survey by this and by the official method used for feeding-stuffs in this country[5] There was satisfactory agreement between the results of the two methods, in both of which the ether extraction was omitted as unnecessary for bread Each sample was analysed by two workers who each made two estimations The moisture content was determined by heating separate weighed samples for four hours at 110° C, and the crude-fibre results were calculated to a 15% moisture basis for comparison with the values for flour The results are presented in the table

Of the seventeen samples, the values for 10 were within the crude-fibre limit recommended by the Medical Research Council, 5 were slightly above and 2 exceeded it by a large amount These 2 certainly, and the other 5 probably, contained a large percentage of coarse bran at the expense of the more desirable fractions of the tion had appeared Adjuvant measures such as local antiseptic dressings were used once drainage of the muscle abscesses had been established, but there is no question that these cases recovered much more rapidly when treated with sulphanilamide in the way described than when left alone It was the rule, once the necessary local measures had been taken in these cases of boils, muscle abscess and cellulitis, for recovery to be prompt and uninterrupted provided an adequate dosage of sulphanilamide was employed The most dramatic results were seen in the cases complicated by extensive skin sloughing and genito-urinary infections The following cases illustrate the effect of the drug

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[1] See *Lancet* 1941, i, 703
[2] Booth R G Carter R H, Jones, C R and Moran T *Chem & Ind* 1941 60 903
[3] Official and Tentative Methods of Analysis of the Association of Official Agricultural Chemists Washington D C 193,
[4] American Association of Cereal Chemists Cereal Laboratory Methods, 1941
[5] Fertilisers and Feeding Stuffs Regulations Statutory Rules and Orders, 1932, No 658

A Chinese woman, aged 47, suffering from a mild attack of discrete unmodified smallpox She came into hospital when her lesions were vesicular, maturation and crusting followed the normal course and no special treatment was adopted Ten days after admission, when her lesions were still crusted, she had several rigors in the afternoon , for the next two days she continued to have three or four rigors a day, and her fever which had abated rose to 104° F during them There were no obvious signs to account for these rigors and the irregular fever but she finally complained of a "burning and discomfort" on micturition A hæmolytic streptococcus was grown from a catheter specimen of her urine and the exhibition of sulphanilamide brought about a prompt remission of symptoms and an uninterrupted recovery

A Chinese boy aged 9 years, admitted to hospital at the vesicular stage of an unmodified attack of discrete smallpox He was not dangerously ill, and as the disease was running its normal course he was left alone A week after admission his face became œdematous and he complained of giddiness, headache and fever Generalised anasarca developed rapidly, and his urine was reduced to 6 oz in the twenty-four hours and was smoky in colour A clean specimen yielded a growth of hæmolytic streptococci The exhibition of sulphanilamide produced a remission of fever and symptoms within twelve hours, and from then on recovery was uneventful

A Chinese, aged 34, admitted on the sixth day of a severe attack of confluent smallpox He had been variolated by the nasal route when a child of 3 years, and had "taken" At the height of maturation he developed extensive sloughing of the skin over the 4th, 5th and 6th ribs on the posterior aspect of the left hemithorax His secondary fever continued to increase and the skin over the whole of the left flank rapidly became œdematous Sulphanilamide was begun at this stage in the routine dosage and immediately checked the tendency of the sloughs to spread Eventually the man made a complete recovery after 100 days in hospital and a severe complicating attack of beriberi

Whole series —The figures for the three groups are as follows

	Toxic	Focal Phase Unvaccinated	Vaccinated
Cases treated	13	49	41
Deaths	13	11	2
Fatality %	100	22 4	4 8

Of the unvaccinated patients in the second group who died, 2 were women in the puerperium and 6 were young children The 2 deaths in the vaccinated group were due to confluent smallpox The fatality for the whole series during this epidemic was 44%, and there is no doubt that sulphanilamide lowers the mortality in the septic confluent cases and in those cases showing some septic complication but as it is impossible to give the proportion of vaccinated to unvaccinated patients in the whole series it would be unwise to stress the comparison between the treated and untreated groups

DISCUSSION

Certain points can be made from the results obtained in this group of 103 patients First the toxic phase of smallpox is not influenced by sulphanilamide in the dose given, 6 g in the twenty-four hours , second, the focal phase does appear to be modified in a certain number of unvaccinated patients in the sense that the normal evolution of the lesions is arrested at the vesiculo-pustular stage with a resulting diminution or suppression of the secondary or focal fever , third, the septic complications which occur so frequently in the focal phase are profoundly influenced by this drug In treating the common septic complication of this phase sulphanilamide is extremely valuable and on occasion does undoubtedly save life In muscle abscess, cellulitis, sup periostitis, suppurative arthritis, streptococcal infections, otitis media and panophthalmitis it has rapidly, and I think the real value of the drug is in the treatment of these septic complications

More might have been expected from the use of sulphanilamide in the focal phase of unvaccinated cases but these observations tend to show that the drug cannot be relied on to abort or to influence the focal lesions The organisms found in the pus of smallpox are usually either a hæmolytic streptococcus or a staphylococcus and in the majority of these cases where a bacteriological examination was possible a streptococcus was isolated Therefore the drug should have produced an observable effect in more than 19 out of 49 unvaccinated patients but it is a disappointing fact that a number of the unvaccinated confluents showed no response

These findings tally with what we know thus far of the action of the sulphonamide group, and they also agree in the main, with the observations of others who have treated smallpox with the sulphonamides

Buttle, in reviewing the action of the then known members of the sulphonamide group in 1939, pointed out that only two virus diseases—trachoma and lymphogranuloma inguinale—were influenced by them, and it has since become clear that the virus phase of smallpox remains completely unaffected by them The earliest report on their use in the treatment of smallpox seems to be that of King and Rozario in 19 A European woman, aged 33, who had been vaccinated in infancy, was given sulphamidochrysoidin ('Prontosil rubrum') by mouth from the vesicular stage onward, and the drug was thought to have lessened the number of pustules and prevented the secondary fever

In 1940 McCammon treated 4 cases of the disease with sulphanilamide and claimed that 3 of them showed merely an evanescent macular rash, while the fourth developed three pustules only He makes no mention of the vaccinal history of any of these patients, and the conclusion drawn, that sulphanilamide is beneficial if given early in smallpox, does not seem to be entirely justified Fitzgerald Moore, writing in the same year, stressed the need for caution in assessing the results of sulphonamide therapy in smallpox, and mentioned that he had treated 6 confluent cases with sulphanilamide during a Nigerian epidemic with a fatality of 100%

In March, 1940, Pierna described the results he had obtained in two different epidemics which occurred in Spain after the war His report is based on 7 cases only and in most of them sulphanilamide treatment was begun in the vesiculo pustular stage The dosage and route of administration employed are not described, but the drug when "given to subacute, acute and confluent cases produced early improvement in the general condition of the patients, subsidence of fever and cessation of growth of the lesions" The vesicles became converted into attenuated pustules which dried up in 4–5 days, with subsequent shedding of the crusts in another 4–6 days No complications were observed in the cases treated with sulphanilamide, and Pierna concluded that the drug "reduces the period of evolution of the lesions to less than half the normal, that it attenuates the smallpox virus and that it is to be regarded as specific in the treatment of smallpox"

In December, 1940, Patel and Haidu published a valuable review of the results obtained by them in Bombay in the 193 and 1939 epidemics They treated selected cases of the septic confluent type with oral sulphanilamide, 'Uleron' and sulphapyridine, and found that sulphanilamide appeared to be the most effective of the three Uleron seemed to be definitely toxic in the doses they employed and sulphapyridine did not abort the focal phase Further trials were made with sulphanilamide, and between January and May, 1940, 91 cases of semi-confluent smallpox were treated with the drug with 64 controls, and 60 confluent cases with 63 controls These patients were divided into vaccinated and unvaccinated groups, and in both sulphanilamide appeared to bring about a significant drop in mortality The sulphanilamide was given by mouth in a dose of 1 g four hourly for the first week, and in half that dose during the second week Untoward effects were uncommon They concluded that sulphanilamide was the drug of choice for the treatment of smallpox, that it reduced the mortality in confluent cases by about 30%, and that it only seemed to influence septic cases

Early in 1941 Patel also reported the results in 19 confluent cases treated with sulphapyridine The drug given early in the focal phase did not abort the lesions but did seem to avert complications , 5 g daily was given for the first four days

THE LANCET

LONDON SATURDAY, JULY 18, 1942

CIAL FACTORS IN ACUTE RHEUMATISM

THE causa causans of acute rheumatism is known, the rôle of the hæmolytic streptococcus d of the virus are still not clearly defined But, as LE insisted last week, preoccupation with the croscopic organism should not lead to neglect of e "multiple factors" in production of disease It s long been recognised, on clinical grounds, that ute rheumatism is to a large extent a disease of e poorer classes, though it has proved difficult for nical investigation alone to draw any clear-cut nclusions on the relation that poverty was to it e Registrar-General's reports, however, offer aterial for the statistical approach to diseases in ich social factors are believed to play a part As embers of the Committee for the Study of Social edicine, **MORRIS** and **TITMUSS** have investigated the oblem of acute rheumatism by analysing the figures ven in these reports and their deductions will be und on our opening page Poverty as a causative ctor has often been stressed in the past, and attempts ave been made to dissect the responsible components the "complex of poverty" It has been shown at in families removed from poor surroundings the cidence of acute rheumatism is reduced **MORRIS** d **TITMUSS** now show that acute rheumatism and eumatic heart disease must indeed be classed with gh infantile mortality and a high incidence of lmonary tuberculosis as ills bred by poverty

Deaths from acute rheumatic fever are few, but eaths from heart disease in young adult life are any Rheumatism thus ranks with tuberculosis an outstanding cause of invalidism and as one the major killing diseases in this period of life has often been suggested in the past that acute eumatism affected the artisan class more than y other large group in the population, even the ery poor Analysis of mortality from valvular eart disease by social class shows, however, a nsistent rise of mortality with deepening poverty **ORRIS** and **TITMUSS** find no evidence to suggest that e selective incidence of acute rheumatism is influ- nced by any factor apart from those associated with overty As with other social diseases, the mortality om rheumatic heart disease is higher in poverty-ricken areas Roughly speaking it rises with creasing density of population, but the mortality is gnificantly higher in the poverty-stricken villages of outh Wales than in any of the large towns Urbani- tion thus contributes to the death-rate but plays a econdary rôle to poverty itself Climate is at most f minor importance Analysis provided no clear vidence that overcrowding increased mortality from eumatic heart disease, though it has been clearly own to increase mortality from pulmonary tuber- ulosis A possible interpretation of this remarkable iscrepancy is that acute rheumatism does not spread y droplet infection, poverty would then play its art only after infection has been acquired Statis- ical analysis may thus have provided a clue to the way in which the disease is transmitted that should be looked into

Since they are the outcome of poverty, acute rheumatism and rheumatic heart disease must be regarded as preventable Whether rheumatism is caused by a streptococcus or a virus, whether heredity plays a part or not, the mortality and invalidism from the disease will fall as soon as the load of poverty is lightened This is one aspect of a many-sided problem which confronts the new advisory committee, appointed on June 30, whose joint secretaries are Mr **NORMAN CAPENER** (British Orthopædic Association) and Sir **FRANK FOX** (Empire Rheumatism Council) Perhaps, too, the social and preventive medicine committee of the Royal College of Physicians, also formed recently, will consider this question

INCOMPATIBILITIES OF SULPHONAMIDES

IN the early days of sulphonamide therapy severe cyanosis was the most alarming of the toxic effects It was soon recognised, however, that the outlook in these cases was rarely as black as it seemed when taken at face value, and indeed most practitioners disregarded cyanosis in determining the effective dose of the drug **COLEBROOK** and **KENNY**[1] showed that the cyanosis was due to methæmoglobin, or more rarely sulphæmoglobin, in the blood These changes in the blood pigments are representative of a biological mechanism previously described by **SNAPPER**[2] and **VAN DEN BERGH**[3] In the presence of oxygen sulphæmoglobin can be formed in the blood-stream from sulphide absorbed from the bowel, and sulphanilamide is only one of many drugs which facilitate this reaction by acting as catalysts The danger of sulphonamide cyanosis arises from the immobilisation of the body's oxygen carrier Methæmoglobin in the blood is comparatively benign, for it can revert to hæmoglobin spontaneously in the course of a few days and much more rapidly after the administration of methylene-blue - Sulphæmoglobin, on the other hand, is more stable and remains unchanged in the erythrocytes until these are destroyed, which may be a matter of 4 months or so Furthermore, the cyanosis due to sulphæmoglobin is unaffected by methylene-blue Earlier workers were often puzzled by the occasional occurrence of sulphonamide cyanosis without spectroscopically demonstrable changes in the blood That this discrepancy originated in faulty technique seems probable from the investigations of **CAMPBELL** and **MORGAN**,[4] who emphasised the necessity for laking the blood with only a small volume of water and making the spectroscopic examination soon after the withdrawal The present infrequency of gross cyanosis due to sulphonamide therapy as compared with 5 or 6 years ago may, however, be partly explained by chemical differences between 'Prontosil rubrum' and the sulphonamides now in common use

The absorption of sulphuretted hydrogen is said to be favoured by the use of saline purgatives which enhance bacterial activity by keeping the fæces in the fluid state, but this hypothesis does not bear close scrutiny In man, at any rate, only the contents of the colon are likely to undergo any considerable alteration in consistence, for above the ileocæcal valve

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[1] Colebrook L and Kenny, M *Lancet*, 1936, i 1279

[2] Snapper, I *Ned Tijdschr Geneesk*. 1922, 66, 2541

[3] van den Bergh, A A H and Wieringa, H *J Physiol* 1924-25, 59, 407

[4] Campbell, D and Morgan, T N *Lancet*, 1939, ii, 123

Town	Results of analyses			Average
	Analyst 1	Analyst 2	Analyst 3	
Cambridge	0.97, 0.95		1.06, 0.98	0.99
Cleckheaton	0.94, 1.07	0.96, 0.99	1.00, 0.93	0.98
Coventry	0.83, 0.76		0.83, 0.87	0.82
Edinburgh 1		1.34, 1.58	1.14, 1.29	1.28
" 2	0.77, 0.71		0.81, 0.77	0.76
" 3		0.67, 0.72	0.73, 0.73	0.71
" 4	0.64, 0.72	0.60, 0.54		0.63
Greenfield	0.66, 0.65		0.58, 0.57	0.62
Harrow	0.84, 0.77	0.62, 0.66		0.72
Kenilworth	1.08, 1.06		1.06, 1.09	1.07
Keighley	1.60, 1.77	1.60, 1.60		1.64
Lincoln	0.85, 0.87		0.87, 0.82	0.85
Manchester	0.96, 0.81		0.92, 0.87	0.90
Oxford	0.92, 0.91	0.75, 0.79		0.85
Penrith	[illegible], 0.74	0.81, 0.75		0.77
Sheffield	0.8[illegible], 0.89		0.82, 0.76	0.82
West Kirby		1.08, 1.00	1.08, 1.10	1.06

wheat berry. The source of the flours used for baking the bread was unknown in many of the samples analysed, for in large bakers' shops this information is not always readily obtainable.

These results, although obtained on bread and by a different method, agree in the main with the survey of flours made by the Research Association of British Flour Millers, who found that the crude-fibre content of 47 out of 303 samples exceeded 0.9%.[6] Thus shortly before the national loaf became compulsory a small but far from negligible proportion of millers were supplying a product which did not achieve the Medical Research Council's aim of supplying the maximum nutritive value and palatability with the minimum amount of coarse material liable to cause digestive troubles.

Since March, when these samples were collected, there has been time for the millers to get more used to producing the national flour, and its quality has possibly improved. Since a straight-run flour of 85% extraction has a lower crude-fibre content than the reconstituted flour,[1] it might be possible, if millers would produce the former type, to reduce the upper limit in the specification of crude-fibre content and thereby ensure for us a national flour of still higher nutritive value and acceptability. In any case, a check on the quality of the national loaf, such as the fragmentary one here described, should be in constant operation, though this will be inapplicable while it is permitted to mix up to 25% white flour with the national flour.

We wish to thank the Biochemical Laboratory and the Field Laboratories, Cambridge, for facilities for carrying out this work.

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[6] *Nature, Lond.* 1942, 149, 460.

Reviews of Books

A Practical Method of Self-analysis

E. PICKWORTH FARROW, M.A., D.Sc. London: George Allen and Unwin. Pp. 153. 6*s*.

IT is sometimes said that Freud, who created psycho-analysis, was never psycho-analysed. This is, of course, an error; he analysed himself, and since then others like Roheim have done likewise. An English exponent of the method, Dr. Farrow, now explains how beneficial he found it, after two abortive attempts to submit to the more conventional procedure. Professor Freud, in a foreword, describes him as "a man of strong and independent intelligence, who, probably on account of a certain wilfulness of character, could not get on well with the two analysts with whom he experimented." The matter could not be put more simply, and the qualities referred to by Freud are manifest in the book. It is readable, but on many points out of touch with modern psycho-analytic teaching. When the author says, for example, that he prefers to describe "oral erotism" simply as "hunger" he is by implication attacking the edifice at its base; this comes about through his very personal approach and reliance on his own experience, which makes him at once biased and independent. His experience is intensive; he tells us that the book is the outcome of 2800 hours, spread over 18 years, and of more than twelve million words of free association, which he was accustomed to record systematically. The book is fresher and more stimulating than orthodox psycho-analytic manuals.

Roentgen Treatment of Infections

JAMES F. KELLY, M.D., F.A.C.R., professor of radiology, Creighton University; with the collaboration of D. ARNOLD DOWELL, M.D., assistant professor of radiology in the university. Chicago: Year Book Publishers. London: H. K. Lewis. Pp. 432. 33*s*.

THIS book fills a gap in medical literature. Its authors recognise the importance of X-ray treatment of the infections and have put together for the first time in book form the fruits of their own experience and that of many others. The first part of the book deals with physical and biological considerations and here their guidance is less sure. Their reference to protection, for instance, runs: "All sources of secondary radiation should be ascertained and adequate means of protection provided so far as it is possible to do so"; and under the heading "Training not always necessary for success," they state that infections "may be treated by any physician familiar with the operation of X-ray apparatus, the definition of an r unit, and the disease he is treating"—an odd statement in itself, and a dangerous one in its implications (the definition of the roentgen given in the text is not that which has now been accepted internationally). The second part of the book deals with the treatment of peritonitis, parotitis, pneumonia and other infections, the main section being an informative account of the treatment of gas gangrene of which the authors were the pioneers. They make a good case for the further investigation of this type of treatment, though many of their assertions are controversial. They rightly stress the value of X-ray treatment in postoperative parotitis and similar infections in which this method of treatment deserves further trial. Probably a portable X-ray therapy plant for the treatment of infections will one day form a recognised part of the equipment of all large general hospitals.

The Injured Back and its Treatment

Editor: JOHN D. ELLIS, M.D. London: Baillière, Tindall and Cox. Pp. 377. 30*s*.

THIS collection of nine papers by eminent American orthopædists deals with the common minor injuries as well as the more serious fractures and dislocations, with and without cord involvement. The views expressed are orthodox and set out clearly. A chapter on backache as a symptom of visceral disease might have been more at home in a less practical manual but is welcome all the same. Proper stress is laid on a systematic examination of the back; after reading this chapter most doctors will feel that their previous efforts have been somewhat sketchy, and that there is much more to be learned from a complete examination than they had realised. The rôle of the articular facets in causing back pain is discussed—a syndrome which has not yet received much notice in this country but one described as being fairly common. The editor has minimised overlap and maintained continuity; there are no significant omissions.

Synopsis of Blood Diseases

A. PINEY, M.D. Birm., M.R.C.P., physician to St. Mary Hospital for Women and Children, Plaistow. London: Wm. Heinemann (Medical Books). Pp. 120. 10*s*. 6*d*.

DR. PINEY presents an up-to-date summary of our knowledge of blood diseases without going into detail about the changes in the blood-picture. It will be especially useful to the postgraduate student with an adequate background who wants to revise the subject quickly, but it is probably too sketchy to help the general practitioner without such a background. The main difficulty in blood diseases is differential diagnosis and for this a more detailed description of the results of hæmatological examination than Dr. Piney gives is needed. The treatments advocated are on sound and balanced lines and reflect modern practice, though the use of fortified liver extract occurs in several unexpected places. The four colour plates illustrate blood and bone-marrow cells in a rather unconventional way that is hardly convincing and are unlikely to help the average physician for whom the book is intended; the same must be said of the extensive tables of the characteristics of the various types of cells. Nevertheless this book will have its place as a quick "brush-up your blood diseases."

ms and the chance to talk with friends have as uch weight with children as with their seniors deed many of those who preferred school meals ntioned the conversation of friends as the chief raction Other objections were mainly trifling , e food faddist spoke feelingly of mother " If she ows her child can't possibly eat a certain kind of d without feeling ill, she can excuse her child and her child feels quite happy There are many ings I do not like such as fat on meat, tapioca, stews d many others " Several seemed nervous out their table manners, but in one case at least stom set these doubts at rest " The first few nes I thought I would much rather have my ner at home for no apparent reason now that I k back except that I was rather nervous of eating front of strangers " Some preferred the company their family to that of their friends, and some liked the routine of school meals , to one, indeed, seemed an advantage that home dinner was eaten en it was ready and not at a fixed time One emphasised that at home he had enough time to wash properly before dinner, and that he could use his own towel

On the positive side were liking for school fare, and relief for some children from a long and tiring walk or from the alternative of a packet lunch Many of the older children realised that school meals spared their mothers, and that the food was chosen with thought for their own health and development Schools which grew their own vegetables took pride in the quality of the results, but school gardens were only occasionally mentioned, which suggests that this aspect of school feeding might be developed further As Le Gros Clark points out, these children are still getting accustomed to the idea of school meals If the early stages are well managed they will take the system for granted when their own children are going to school This intelligent survey gives many clear leads to the ways in which the present practice can be established as a custom , and once it achieves that status in England it becomes sacrosanct

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Annotations

ABIOTROPHIES OF RETINA AND CHOROID

THE cause of retinitis pigmentosa is not settled It s thought by some to be due to a failure of the od supply to the rods and cones—perhaps owing to oroidal sclerosis In support of this view were the lowing facts first, the disease starts at the equator the eye, where the blood-supply to the outer layers of e retina is at its poorest, being the junction of the eas supplied by the long and short ciliary arteries condly, Wagemann in 1890 found that experimental tion of the ciliary arteries in rabbits produced pigmenry changes in the retina, though confirmation of this rk has not been forthcoming On the other hand, it s been pointed out that atrophy of the choroid owing prolonged pressure in glaucoma does not produce gmentary changes in the retina Latterly there is ore support for the view that the condition is an notrophic change in the neuro epithelium The term notrophy was introduced by Gowers in 1902 to mean want of durability of the tissues It was not essential at this change should be hereditary, but in fact it was ten found to be so Gowers drew attention to Leber's tic atrophy as an example of this condition, and later llins and Leber included retinitis pigmentosa also he hereditary tendency was extensively worked out by ettleship in 1907, who traced the disease in 976 families one instance following it back through the generations a soldier who fell on the field of Waterloo Now rsby[1] has published records of the disease, and also of oroidal sclerosis and macular dystrophy, in which the reditary and familial tendencies seem beyond doubt hese two latter conditions have not yet had their digrees followed up to the same extent as has retinitis gmentosa , if the same rules apply, then it would pear that they can occur as dominant, recessive or x-linked traits

BLOOD REGENERATION IN DONORS

DURING the last three years, blood donors the world ver have been bled on an unprecedented scale, and it is markable that there have been so few reports on the fect of the blood loss The experience of most of those ho have to do with the welfare of donors seems to have een that the removal of an amount of blood not exceeding 20 c cm at six monthly intervals from adults in ordinary ealth is not in any way detrimental to their well being Opinions differ as to the advisability of bleeding at three-monthly intervals or less under war conditions Fowler and Barer[1] of Iowa city have studied blood regeneration in 200 subjects, mostly young men working in hospitals The average drop in hæmoglobin after the withdrawal of 500–600 c cm was 2 3 g per 100 c cm or 18% The average time taken by 105 subjects to make good their blood loss was 49 6 days, the longest being 98 and the shortest 18 days At the end of eight weeks only 74% had made good their loss There was little appreciable difference in a smaller series where the same amount of blood was removed in two fractions on consecutive days In general the slower rates of recovery were in those who showed the greatest fall in hæmoglobin , the initial hæmoglobin level did not appear to be a significant factor in the rapidity of regeneration Unonius and Schroder,[2] however, found that those with a high hæmoglobin returned to normal more quickly than those with moderate or low hæmoglobin levels Fowler and Barer were only able to observe seven subjects who gave 300 c cm , their recovery period varied from 12 to 65 days with an average of 33 days Only a few women were studied, but the findings suggest that their hæmoglobin regeneration is slightly slower than men's Studies to show if subsequent donations are associated with quicker or slower regeneration are inconclusive , a much larger series would be necessary to establish this point The most striking feature of the Iowa study is the effect of giving daily 1 g of ferri et ammon cit during the recovery period This experiment was made on 89 subjects whose regeneration after a previous donation had already been studied The average recovery time was reduced by 27%, and the daily hæmoglobin gain increased by 49% With subsequent donations iron appeared to have progressively less effect on regeneration No way of predicting the speed of hæmoglobin regeneration beforehand was found Snapper and others[3] found that Chinese donors were prone, presumably on account of their poor diet, to develop a microcytic anæmia, occasionally associated with achlorhydria, glossitis and splenomegaly , they responded rapidly to the administration of iron The reserves of iron carried in the bone-marrow, though adequate for most natural emergencies, are reduced in hæmorrhagic anæmia, and there is satisfactory evidence, according to Schultze,[4] that reaccumulation takes place after iron the fæces are fluid. Thus, only a small part of the alimentary canal is affected. Again, if the amount of water in the bowel increases owing to the action of the saline purgative in preventing absorption, sulphuretted hydrogen, which is fairly soluble in water, will tend to remain in solution in the bowel rather than pass through the intestinal mucosa. Another point which is often overlooked is the importance of the speed of action of the saline purgatives when properly administered. If the bowel is "emptied" by a process equivalent to lavage, and the procedure is completed within an hour, it is reasonable to suppose that there will be a greatly reduced opportunity for the absorption of sulphides or anything else until the cataract has abated. It may be objected that all this is speculative, but is it more speculative than the reasons which were once supposed to justify the prohibition of sulphur-containing foods? Scepticism over the importance of such foodstuffs in the pathogenesis of sulphonamide cyanosis is borne out by Niblock, who gave a diet containing eggs, onions and other foods having a high proportion of combined sulphur to 100 patients receiving sulphonamides. Spectroscopic examination failed to reveal methæmoglobin or sulphæmoglobin in the blood. Again, Smith[6] has shown that sulphapyridine can be given without fear of toxic effects to patients who have received intravenous injections of 'Pentothal sodium,' despite the fact that this compound contains 12% of sulphur. Observations of this kind[7] are to be set against laboratory experiments in which diets and doses bear little relationship to the problem confronting the practitioner. There seems no doubt[4] that the administration of sulphur in the uncombined state does produce methæmoglobin (and occasionally sulphæmoglobin) in a certain proportion of patients receiving sulphonamides, but now that confection of sulphur is among the forbidden fruits of the pharmacopœia few practitioners are likely to use this drug as a laxative.

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[1] Sorsby, A *Irish J med Sci* November, 1941

[1] Fowler, W M and Barer, A P *J Amer med Ass* 1942 118, 421
[2] Unonius E and Schroder T *Nord Med* 1941, 10, 1046
[3] Snapper I Lui S H, Chung H L and Yu, T F *Chin med J* 1939, 56 403
[4] Schultze M O *Physiol Rev* 1940, 20, 37

Recent work suggests that the sulphonamides should be avoided when quinine is being given. Niblock[5] observed that in 6 patients treated with quinine and sulphonamides simultaneously vomiting occurred in every case and recovery was slower than was expected. Pharmacological confirmation of this clinical observation comes from Harned and Cole,[8] who have shown that in rats receiving sulphapyridine and quinine the absorption of the sulphonamide is increased on the average by 44%, and there is a corresponding rise in the amount of acetyl-sulphapyridine in the urine. The largest dose of quinine given almost doubled the output of acetyl-sulphapyridine. They found no corresponding rise in the volume of urine secreted during these experiments, and this curious effect of quinine must therefore increase the risk of deposition of crystals in the kidney tubules. It would be interesting to know whether sulphonamide quinine therapy in the human subject produces impairment of renal function, for Niblock's observations taken with those of Harned and Cole raise the possibility that this combination of drugs may produce uræmic symptoms. When mepacrine hydrochloride ('Atebrin') was substituted for quinine in the experiments on rats the alterations in absorption excretion of sulphapyridine were not observed this country the occasions when sulphonamides and quinine are used together for combined malarial and bacterial infections must be rare. But in tropical subtropical countries this incompatibility will have to be borne in mind.

THE FUTURE OF THE SCHOOL CANTEEN

The numbers of children taking dinners in school, according to J. Alison Glover,[1] should reach a million by September of this year; but hopes that school meals on a large or even universal scale have come to stay, must depend ultimately on what the children think of them. In an inquiry[2] undertaken by F. Le Gros Clark for the education committee of a home county, the children's views have been directly canvassed. Lest there should be any element of posing for the camera in their replies, the subject was set as an ordinary class essay, and the children were told nothing about the inquiry. The Hertfordshire schools which took part represented every type of urban and rural district, and the first 600 essays were drawn without selection from the first 18 schools, and analysed.

Answers were most spontaneous and frank from children between 9 and 11; the 13 and 14 year-olds were more consciously concerned with the technique of composition; but most of them expressed an honest preference, one way or the other, for school or home meals. About 31% of the boys and 35% of the girls favour school meals; 45% of boys and 41% of girls favour home meals; the rest were doubtful, indifferent, or did not state their preference. At first sight it appears disappointing that a larger number prefer home meals, but when the reasons for this preference are considered it becomes clear that many objections could be overcome by better management of school feeding. That many of the bigger boys complain of leaving the table hungry is a complaint which calls for obvious and immediate remedy. The adolescent appetite always has to be seen to be believed, and the lad who wrote "a boy of fifteen eats a man's dinner" was probably underestimating, if not his own needs, at least his own capacity. Those who complained that the helpings were all the same size, and that the little ones got as much as the big ones admitted reasonably enough that as everyone paid 4*d* this lack of discrimination was fair; but they were still hungry. At home, no doubt, they would make out on hunks of bread, but the schools, in an effort to provide a properly balanced meal within an economic framework, are presumably hard put to it to give them enough. King Solomon, when he failed to satisfy the hunger of the sea-monster, fell on his face with shame and gave up trying. The schools will have to exceed the wisdom of Solomon by finding way to fill their voracious young diners. Many children objected to crowding and noise; and some points seemed to be lack of drinking water on the tables in some schools, and rules against talking at meals in others. These all clearly spring administrative difficulties which the staff have not yet had the accommodation, equipment or imagination to overcome. Clean and comfortable di the causation of dyspepsia It is permissible to infer at the bolting of meals, or the cramped position of the otor driver for instance, must be factors at work in any of the non-organic indigestions, and that the currence or not of such indigestion will depend at least part on the conditions of tone existing at the time, us in turn depends mainly on conditions of general ealth and in particular on physical fatigue and mental ate It is but a short step from such functional ariations to the secondary changes of gastritis Hence ay arise the many “nervous” dyspepsias in which astritis is also present—but in which no clear physical ause of the gastritis can be found—and in which it is imarily general and nervous factors, mode of life and egime, that require investigation and attention rather han the purely local condition of the gastric mucosa

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[5] Niblock, W. McN. *Indian med. Gaz.* 1941, 76, 449.
[6] Smith, E. J. R. *Brit. med. J.* 1940, ii, 488.
[7] See also *Lancet*, 1941, i, 824.
[8] Harned, B. K. and Cole, V. V. *J. Pharmacol.* 1942, 74, 42.

[1] See *Lancet*, July 11, 47.
[2] 'The School Child and the School Canteen." Published the Hertfordshire County Council.

WAY IN FOR THE POLIOMYELITIS VIRUS

THOUGH Landsteiner and Popper[1] showed as long ago s 1908 that the agent causing acute anterior poliomyelitis was present in the brain and cord of fatal cases and nfective for monkeys, the common portal of entry of he virus in man has not yet been agreed on That the irus was present in the fæces of human cases was shown y Kling[2] in Sweden in 1912 and confirmed by Sawyer[3] n the United States in 1915 For some reason this gnificant fact was lost sight of and interest became ntred on the nasal and nasopharyngeal areas Flexner nd Lewis[4] first propounded the theory in 1910 that the irus reached the CNS from the nasopharyngeal mucosa y passing along the filaments of the olfactory nerves o the olfactory lobes of the brain After this the virus as isolated by numerous workers from the nasopharynx human cases both acute and convalescent and from o called healthy carriers This seemed to be sufficient vidence for most of those interested in spite of the fact hat as a rule the epidemics did not occur at the season hen other diseases spread by droplet infection were revalent In 1938 Sabin and Olitsky[5] observed that, fter nasal instillation of the “MV” strain in rhesus onkeys, the virus was demonstrable in the nasal ucosa and secretions for the first 72 hours, but not at the me of paralysis Sabin[6] also failed to isolate it from he same region after inoculation by the tonsillopharyngeal route Recently Sabin and Ward[7] have failed to nd the virus in the collateral sympathetic ganglia, drenals and salivary glands of fatal human cases ow[8] they have found that after intrasciatic inoculation f the MV strain in 8 rhesus monkeys paralysis developed n 3–5 days and virus was present in the brain and cord ut could at no time be demonstrated in the nasal ecretions Even in the terminal phase the virus had ot spread sufficiently in the CNS to involve the olfactory ulbs and adjacent nasal mucosa and was not present n the collateral sympathetic ganglia, adrenals or alivary glands Their last two reports indicate that oliomyelitis virus after multiplication in the central ervous system probably does not spread outward again o affect the peripheral collections of nerve-cells in various issues They[9] have also failed to find any virus in the asal secretions, saliva and oral secretions expectorated n 20 paralytic cases The tonsillopharyngeal route has tely been discussed at length by Aycock,[10] who concludes that removal of the tonsils definitely increases he chance of infection with the virus of poliomyelitis nd so should be carried out at times of the year when he disease is not prevalent As early as 1898[11] it was uggested that the gastro-intestinal tract was probably he portal of entry of the agent causing the disease n 1938[12] the presence of the virus in the stools of cases f poliomyelitis was rediscovered and the virus has now een isolated from the fæces of many people suffering rom the disease and their intimate contacts Thus angmuir[13] has found that of 33 intimate contacts of paralytic cases four-fifths of those who had symptoms of illness and nearly as many of those who had no symptoms harboured the virus in their stools The virus has also been isolated from sewage on six different occasions[14] in different localities in the USA and once in Sweden[15] Last of all the virus has been found in flies caught in several different localities[16] either on the premises of cases of the disease or at the mouths of sewers draining an area in which cases of poliomyelitis were present All these observations, together with the frequent findings of the virus in the human pharynx and intestine at autopsy,[7] suggest that these are the usual portals of entry in man

1 Landsteiner and Popper, *Wien klin Wschr* 1908, **21**, 1830 2 Kling, C Petterson, A and Wernstedt W *Commun Inst med Stockh* 1912, **3**, 5 3 Sawyer, W A *Amer J trop Dis* 1915, **3**, 164 4 Flexner, S and Lewis, P A *J Amer med Ass* 1910, **54**, 535 5 Sabin, A B and Olitsky, P K *J exp Med* 1938, **68**, 39 6 *J Amer med Ass* 1938, **111**, 605 7 Sabin and Ward R *J exp Med* 1941 **73**, 771 8 *Ibid*, 1942, **75** 107 9 *Ibid*, 1941, **74** 519 10 Aycock, W L *Medicine*, 1942, **21**, 65 11 Bülow-Hansen and Harbitz, F *Norsk Mag Lægevidensk* 1898, **59**, 1170 12 Trask, J D, Vignec A J and Paul, J R *Proc Soc exp Biol N Y* 1938, **38**, 147 13 Langmuir A D *Amer J publ Hlth*, 1942 **32**, 275 14 Paul, J R, Trask and Gard, S J *J exp Med* 1940 **71**, 765 Trask and Paul, *Ibid*, 1942, **75**, 1 15 Kling C (reported by Levaditi) *Bull Acad Med, Paris* 1940, **123**, 335 16 Paul, Trask Bishop M B, Melnick, J L and Casey, A E *Science*, 1941 **94** 395 Sabin and Ward, *Ibid* 1941, **94**, 590 Toomey, J A, Takacs, W S Tischer, L A *Proc Soc exp Biol N Y* 1941, **48**, 637

NOT FOR US

AFTER what we have been told about the shortage of phenol and its derivatives no one over here is likely to begin trials of a remedy for “athlete’s foot” (tinea interdigitalis), advocated in America, which consists of equal parts of phenol and camphor The phenol is melted and the camphor rubbed into it until the whole mass is liquified A similar preparation of phenol 1 camphor 3 appears in the BPC as phenol or carbolic camphor The fifty-fifty mixture, according to Francis,[1] is non-irritant to the skin and non corroding to clothing It is painted on the affected part several times a day, it must not be applied to wet skin, because water liberates the phenol The application is said to give immediate relief from itching and has been successful in curing tinea cruris A good story has been made out of this treatment in the *Reader’s Digest* for June It appears that Francis was using the phenol camphor mixture as an insecticide in 1907 when he observed that it was non-irritant to the skin and appeared to cure a patch of ringworm on his arm to which he applied it This article has been followed by a popular demand for the mixture in America sufficient to produce an editorial warning in a later issue of the same journal[2] that until more inquiry has been made it should be used with caution and under medical supervision The more so, as athlete’s foot as a rule responds readily to benzoic acid 5%, salicylic acid 3% in the form of Whitfield’s ointment Miller[3] describes a case in Canada which illustrates the possible dangers of a phenol-camphor mixture, in this case in the proportion 4 to 1 A young man had large patches of ringworm on his shoulder, scapular region, arm and trunk covering a total area of 60 sq in He had heard of the phenol-camphor remedy and made himself a mixture of 1 oz camphor and 4 oz carbolic acid, which his housekeeper proceeded to apply to the ringworm Before the application was finished he felt faint and dizzy, so the housekeeper diluted the mixture with water and applied it again Almost at once he became dyspnœic and he died a quarter of an hour after the beginning of the application At the autopsy phenol was found in the internal organs, and death appeared to be due to acute pulmonary œdema In this case absorption was no doubt aided by the inflammatory lesion present as well as by the addition of water to the mixture

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1 Francis E *J Amer med Ass* 1941, **117**, 1973
2 *Ibid* 1942, **119**, 182
3 Miller, F G *Canad med Ass J* 1942, **46** 615

administration Recent work supports this view, for Whipple and his associates,[5] using radioactive iron, have shown that absorption from the intestine is controlled by the needs of the body, moreover, it has more than once been suggested that iron administration has a stimulating effect on erythropoiesis It seems rational, therefore, to recommend a short but intensive course of iron after a substantial donation of blood The objections are, first, the inconvenience to the donor and the occasional disturbance of intestinal function which may result, and secondly, the adverse effect which the measure might have on the recruitment of donors It is obvious that only those with a satisfactory hæmoglobin level should be bled, and the routine determination of hæmoglobin content before bleeding is too seldom carried out Using a suitable instrument a reliable assistant can be both accurate and speedy, and he or she should form an integral part of all bleeding teams

ASPECTS OF TWINNING[6]

Professor Newman, well known as a biologist and an expert on twins, has brought together a mass of lore about twins—from the realm of myth and legend and from highly scientific sources such as the Maxim Gorky Medico Biological Institute and Japanese salmon nurseries Ambroise Paré reports that "one Margaret, a woman sprung from a noble and ancient family near Cracovia, and wife of Count Nerboslaus, brought forth at one birth thirty five live children, upon the 20th day of January in the year 1296" Even the Dionne quintuplets hardly rival this Twins raise problems in biology, embryology, medicine, psychiatry, and psychology, and the causation of twinning is a mystery Why should there be a twinning rate in Belgium nearly 200 times as great as in Cochin China? (And why, incidentally, should Great Britain be almost the only civilised land unable to publish official statistics of their frequency?) It seems that there is a hereditary factor in the production of binovular twins, but how is it possible for a father who has inherited the twinning tendency to influence the production of binovular twins by his wife, as some authors maintain? How important is heredity in the production of uniovular twins? Some people say not at all yet the famous Jean Picard, himself a uniovular twin, married a uniovular twin, and there is good evidence for believing that three uniovular pairs were born in succession, though in each case only one of the pair survived Twinning has often aroused speculation about telepathy Professor Newman tells a remarkable story of twins whose answers in examinations were so similar, despite separation by the breadth of the room, that it was decided to examine them in separate rooms On the day, Charles was given his questions but would make no start After a time, the principal came in and asked where the examination questions for Joe had been left, Joe had been kept waiting for half an hour or more When finally Joe was given the questions Charles was able to begin They wrote simultaneously, finished together, and came back to the classroom together The principal was quite excited "Boys," he exclaimed, "your Latin papers are identical, the same words, the same syntax, the same grammar, and the same mistakes! But I am sure you didn't cheat It must be because you are twins" Some of the most interesting work with twins has been done by the co-twin control method, mostly in Russia, until about two years ago For instance, five pairs of uniovular twins were taken and one member of each pair instructed in building with building blocks by one method, their brothers by another In the one method of training, the children, between the ages of 3 and 5, were required copy a structure shown in a picture in which the r of every block was given By the other method, brothers had to copy the same picture but there wa indication of which block went where—the c had to find that out for themselves After two m training, all were given a new and complex structure copy, both by the accustomed and u methods, and were also given a free creation test gress had been slower in the twins who had received lesser degree of help in construction during training, in the test they greatly excelled their twin brothers skill and diversity of manipulation and in the complex of the structures they created

GASTRIC MOTILITY AND DYSPEPSIA

Functional disorders of the stomach make up large proportion of the minor dyspepsias (and not a of the *major ones*) whose exact *mechanism* is still far fro clear Variations in gastric secretion, either in quant or composition, can rarely be correlated with symptom and even complete achlorhydria may be unas with any indigestion Gastric emptying time again vary within wide limits without precisely kno or even any symptom of dyspepsia, and is subject t considerable alterations under changing conditio Peristalsis and tone of the stomach can be studied wi fair accuracy by radiography and we have learnt th it is essentially these factors which are responsible f gastric sensations Normally these two processes harmoniously together and it is when disharmony that symptoms appear, though we cannot al elucidate the precise causes and factors provoking su disharmony It may often be an alteration in nervo control, reflexly produced and independent of lo stomach *conditions*, which *is at fault* Wegelius[1] Helsinki, studying such functional problems children, has adopted the method of kymography of stomach, as first introduced by Stumpf in 1936 By means the movements of the stomach are record graphically, and kymographic records are made lastu 60–90 seconds each for at least two consecutive perio so that the complete movements of the stomach can it were be watched objectively for a relatively long tim In this way, as compared with the short exposures us in normal radiography, a clearer insight into both to and peristalsis should be possible, and the two may studied almost independently Not everyone agre about the exact interpretation or value of kymograph but Wegelius's observations are certainly interes Following the work of Weltz he describes three ma types of gastric activity and emptying First, t peristaltic (normal) type, in which emptying of t stomach depends on a satisfactory filling of the p pyloric canal, which in its turn depends on a we balanced tone Such emptying is independent of po tion and internal hydrostatic pressure Secondly, a t in which tone is variable and filling of the prepylo canal is poor here the gastric contents are pass on unevenly and the emptying is to some exte dependent on posture and internal hydrostatic pressu Thirdly, a definitely abnormal type in which is completely asystomatic The stomach then itself like a lifeless tube, according to the hydro pressure inside Thus if it is filled rapidly in t upright position it empties equally rapidly ("Sturze leerung"), small amounts of food may on the co trary be retained over long periods and may only passed on when this residue is made to enter the p pyloric canal by the patient lying down, or by directed towards the pylorus Between these types are many gradations This closer analysis gastric motility suggests again the importance of simple matters as posture and the rapid eating of r industry An ophthalmic surgeon has no more t to be exempt than a skilled electrician nor can laim special consideration on account of risk to the munity We are all now suffering these risks from tion among skilled electricians and engineers and all grades of skilled workers upon whom we rely y time we enter a 'bus or a tube-train or even our house, although half the time we are unconscious

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[5] Hahn P F Bale W F Lawrence E O and Whipple, G H *J exp Med* 1939, 69, 739

[6] Twins and Super twins A Study of Twins, Triplets, Quadruplets, and Quintuplets Horatio Hackett Newman, Sc D, professor of zoology, University of Chicago London Hutchinson Pp 164 10*s* 6*d*

[1] Wegelius, C *Nord Med* 1942, 14, 1020

he majority of health workers, however, are not red in industrial units So far as they work in ips the greater number are based on hospitals A ital, if you like, is the nearest approach to a factory he health industry Of course, workers in hospitals see their link with industry easily when accidents n the bench come in and they return the worker in imum time back into production But catering for treatment of all sickness and injuries in society means ter efficiency for that society and a production drive, n translated to the hospital, becomes an efficiency ve We must keep our health services and our pitals up to the maximum pitch of efficiency as our her contribution to the industrial production drive

eports are now coming in on the success of production mittees in factories Should there not be some allel in a hospital to these production committees in actory ? The organisation of a hospital is more plex than any other unit that I can think of, so that eems more than ever necessary to consult the various, sibly contending, interests on organisational matters of the strongest recommendations in the Athlone mittee's interim report on nursing was that there uld be nurses' committees in every hospital I der in how many hospitals this has been acted upon, if it's necessary to have a medium for the expression nurses' interests it can be no less important to have for the domestics, porters and technicians

f one section of a group understand how their interests n with other sections, there is more likely to be good mwork when heavy demands are made upon the ole group But it is important to get together for er reasons Many nurses are full of ideas on how to anise ward work better, but cannot get heard in the at quarters I'm certain many surgeons could learn rick or two from the hospital plumber, carpenter or gineer, and why don't physicians consult the kitchen ff more ? Then there are still patients who get good as Look up the letter from a patient on the design the bedpan and the capacity of the urine bottle[2] ny of them have ideas about evening clinics and out-tient appointments too We must tap all these ideas our hospitals That is what is being done in industry lay by production committees and there are already ny remarkable stories of their achievements

Industry is striving in other directions For instance, ey are bringing women into men's jobs wherever ssible Are we making it easy for women to train emselves and take the place of men ? Have we rown open every teaching hospital to women students a par with men ? If we haven't then we are lagging hind the best workers in industry In the USSR even peace-time 70% of the doctors were women Industry is examining jobs to see if the highly skilled people employed on highly skilled work Have we rational- d our industry ? How many nurses—and nurses are ry scarce—are doing work which wastes their training d technical skill ? I heard of a sister taken off a sualty department and put in the stores, virtually as lerk, I know of a hospital where all the nappies in the nts department are washed by nurses Do doctors e clerks enough ? The other day a house-physician nt me a long report in duplicate and he hadn't even ed a piece of carbon paper Do we use the dictaphone ough ? Is machinery for domestic work used to e maximum extent ? Domestics are very scarce too d more than ever we must extend the use of machines

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Finally, does the health industry practise what I pe it's going to preach to other industries ? Does it aintain the health of its own workers ? Most hospitals n't even begin to record sickness properly among their aff Nurses usually have individual sickness records t few hospitals can tell you the average days lost annually among first-year probationers compared with third-year or compared with staff nurses or sisters Even individual records of domestic staff are rarely kept We are right behind the Ministry of Supply factories in this Do we correct refraction errors in our staffs ? Do we X ray all nurses and ward maids ? Do we do this that and the other to maintain them at their best health level and make sure of one essential for efficiency ? No health worker need feel that there is not important work for us to do immediately, if we wish to line up with the tremendous production effort in industry

In England Now

A Running Commentary by Peripatetic Correspondents

SURELY it was Mrs Grundy herself with the ghostly eye of good Queen Victoria upon her, who drew up the rules of procedure for women's recruiting boards Each recruit is examined first by a male and then by a female doctor From the neck to the knee the Wren of the future shall, according to the regulations, remain an unprobed mystery for the male doctor He is allowed gently to tap the patella tendon but the joy of stroking the soles of her feet is denied him That only the lady doctor may do, decently shrouded behind the thickest of curtains He may ask whether she has fits or flatulence or whether when she eats marmalade the top of her head steams (this, according to Commander Campbell of the Brains Trust is a well-known manifestation of allergy), but never may he inquire as to the regularity of her periods In spite of all these precautions last week a stout matron in black alpaca and feather boa insisted on chaperoning her daughter through the Board, having heard " what dreadful goings-on " happen there Then suddenly Mrs Grundy unbends and the mere male is asked to give the colour of the recruit's eyes and hair and to describe her complexion, a generous gesture which a niggardly government quickly smothers by allowing one word only for each Only one bare word to describe those eyes as deep as the brown pools of Western Eire one word for the glory of the cunning of peroxide ! For the complexion, were there but room, I would call to my aid the description of a sweet pea given in my favourite seed merchant's catalogue " A bewitching combination of flesh pink richly overlaid on a cream ground Slight shading in hot weather is essential to retain its delightful colour "

Coming from men's boards I notice that the female pulse rarely rises above the hundred mark during examination as the man's invariably does, " and blood lies quiet for all you're near " The modern young lady takes life very calmly But oh, oh the halitosis It is told of Queen Anaitis of old that she kept an asp in such a place as to discourage love-making Surely halitosis is as effective and almost as deadly a protection I might have suggested this to the stout party in black alpaca

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The most obvious and prosaic reason for doing a round on horseback is that it saves petrol and wear-and-tear of precious tyres Another, more personal, reason is that it exercises a middle-aged body and, in the words of the patient, shakes up the liver—though why that long-suffering gland should be the better for being shaken up I leave to the physiologists to answer Horses will go along tracks and lanes where cars cannot, horses don't have to be steered—at least, not to any absorbing extent—and from the saddle one does literally see things from a new angle Being perched up in the air one can even look over our high Devon hedges and take a view at once leisurely and appraising of Farmer Blatchford's bullocks and Farmer Burrington's " yowes " Passing various homesteads at a stately pace one can ruminate upon the numerous dramatic illnesses attended therein—that cottage, for example, where the eldest boy so unexpectedly and tragically died of meningitis after mumps, that other cottage which was the scene of a difficult breech-delivery, that farm where the farmer had pneumonia, in the presulphanilamide days, which caused such alarm and despondency in the household until he successfully weathered it, and the parsonage in which, a dozen years ago, the then incumbent was operated upon for acute intestinal obstruction There are also the birds to be seen, the daws and rooks, the fat wood-

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[2] *Brit med J* June 6, 1942 p 710

HEALTH WORKER AND PRODUCTION

T O GARLAND M D CAMB, D P H

THINGS are altering, but there's still little conscious relation between the methods and relationships of production and the medical student's curriculum I can only speak accurately of my own experiences We used to fill in the line on the case sheet that started with the word "Occupation," but many a time the patient's answer meant nothing to us, while the inquiry was never pushed as far as a visit to the factory or dock where the accident had occurred While we learned that diseases like lead poisoning occurred in painters, we learned nothing about the measures that could be taken at the site of work to prevent this happening While we had vague ideas that tuberculosis was associated with social conditions, we did not write a sociological background to the TB case illustrating how the hours of work and length of journey were related to the fatigue that had lowered the resistance, nor did we write our reports on cases of anæmia, illustrating how the wages or family budget were related to the state of nutrition

Historically, we were still worse off I can never remember any mention in a lecture of the mass ill health *resulting from the conditions of production in 1820–30* The fact that vast epidemics of cholera swept through the country as a result of the chaotic crowding in unplanned and insanitary towns was news to me four years after I had qualified and was studying for the DPH Till then I believed that cholera had never occurred in England, but was confined to the tropical countries We were never offered an explanation why the highly developed technique of the physicians and surgeons who taught us was so vastly removed from the primitive health conditions that we suddenly met on the district—knowledge and technique on the one hand, filth and malnutrition, overcrowding and chronic ill health on the other The explanation is only to be found in a historical study of the production methods and relationships of our society, but this we were never offered

Today, this black-out on health in the factories, workshops and offices, pits, quarries, and shipbuilding yards must be torn down Everywhere the cry is production and our training and interests, whatever they may have lacked, impress us that the healthy worker produces more than the unhealthy, and this sets each of us thinking, "What is my rôle?"

Health workers must not only cut down casualties in the industrial army, we must maintain the health of its members at the highest possible level The first step is to make available to workers, managers and Government alike the knowledge that we possess for maintaining and building up health We must talk *in language free from* medieval sorcery and modern humbug The widespread neglect of simple health measures in industry is not only a reflection on the organised working-class and the capitalist, it reflects an apathy and lack of social responsibility in health workers

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Casualties in industry from sickness and accidents are high According to the first annual report of the Birmingham Accident Hospital there are now 100,000 accidents a year in that city alone requiring hospital treatment, many of them only as outpatients, but they all entail loss of time Many kinds of industrial illness are increasing too Dermatitis, for example, can be largely prevented by cleanliness, washing facilities, dust control, and protective clothing Why then is it so sharply increasing? Go around and inspect the cleanliness and the washing facilities in factories and you will soon learn one reason Cowsheds have been cleaned up enormously in recent years, let us at least do for our factories what we've done for cowsheds

Accidents or illness figures for the whole country are practically impossible to get hold of The Approved Societies used to make returns to the Ministry of Health, on illnesses of three days and over among their members In 1933, when these figures were last published, the total for the year amounted to 29 million weeks It's almost certainly much higher now and 30–40% of industrial sickness absence is probably from illness of under three days' duration I don't think we should be far out today in putting the yearly loss from sickness in ind workers at about 40 million weeks But these are far from accurate and straightaway we see one of essential needs of proper health planning—the l of proper sickness and accident records You c plan for health without recording ill health Some the large factories in the war industries are recording an absenteeism among the women of 15% This is a on account of all causes, many of which won't be illness, but it is equivalent to an absence of 7–8 working weeks in a year

I think we fall down badly in not keeping the organised working-class sufficiently aware of what are the principal elementary conditions for healthy work We don't constantly emphasise in simple language the scientific requirements of lighting, ventilation, dust control and washing facilities We don't constantly emphasise the dangers of over-fatigue and how it must be counteracted by rest-pauses or prevented by better transport facilities We don't emphasise the paramount importance of good meals during the working shift If we can get the organised workers really conscious about these matters, the battle will be nearly won, for the legal requirements are already largely provided in the 1937 Factory Act But what can a mere 300 odd inspectors do to see that the act is observed in 250,000 premises? A little more certainly than the single medical inspector for all our mines and quarries—our most dangerous industry and one employing over three-quarters of a million men He can have little more time than allows him to dash from one serious accident to another Safety and health regulations will never be observed properly until the *workers themselves understand them and see that they* are kept

The Royal Society of Medicine recently had a discussion on dermatitis in industry where one speaker referred to workers as "unthinking asses" This is an attitude sometimes met with among health workers towards other workers We find them strangely ignorant on elementary facts about physiology, hygiene, dietetics, parasitology and so forth But the mass the workers have left school at fourteen and who helped them learn about these facts since? Has the health profession done much? Mighty little, I suggest When a consultant accuses them of being unthinking he really means ignorant, and I would ask him what has he done to help them to know? That is one of our foremost tasks, to make our technical knowledge available so that the mass of the workers become conscious of the relation between health and production This is a task that is technically simple We haven't got to teach them complicated anatomical relations, or the meaning of our abstruse technical terminology, but we have got to plug these simple requirements for healthy work with proper scientific data that people with an elementary education can easily understand Very often workers find it difficult or impossible to get a simple honest statement about the exact dangers of the substances they are working with It would be a huge mistake to suppose that workers are so unthinking that they don't want to be healthy, or that they don't want to be free from accidents

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The medical and nursing forces available at the actual site of production are today limited Even if we got a fair proportion allotted for work as medical inspectors of factories and in big industries as whole-time medical officers and had established in every fair-sized works whole-time qualified nurse, we should not begin to have enough to cover the whole industrial field We must prepared, therefore, to use to a much greater ex people with short training in hygiene and accident vention as our assistants in this industrial health dri The attitude of some doctors who try to curtail activities of the industrial nurse rather than dev them is deplorable So is the attitude of some sultants, *such as eye surgeons,* who try to restrict use of opticians in factory work[1] In normal times w we can train adequate forces we would all wish firmly maintain the highest standards of qualification for t nical work, but in war-time, with greatly depleted fo health workers must accept reasonable dilution like r industry An ophthalmic surgeon has no more to be exempt than a skilled electrician nor can laim special consideration on account of risk to the nunity We are all now suffering these risks from ion among skilled electricians and engineers and all grades of skilled workers upon whom we rely y time we enter a 'bus or a tube-train or even our house, although half the time we are unconscious

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[1] See *Brit med J* May 16, 1942, Suppl p 195, and *Dioptric* June 5, p 69

ie majority of health workers however, are not red in industrial units So far as they work in ps the greater number are based on hospitals A ital, if you like is the nearest approach to a factory ie health industry Of course workers in hospitals see their link with industry easily when accidents the bench come in and they return the worker in imum time back into production But catering for treatment of all sickness and injuries in society means ter efficiency for that society and a production drive, n translated to the hospital, becomes an efficiency e We must keep our health services and our itals up to the maximum pitch of efficiency as our her contribution to the industrial production drive

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[2] Brit med J June 6, 1942 p 710

Mr Johnston is however much concerned at the infantile mortality rate which has risen from 68 per 1000 births in 1939 to 78 in 1940 and 83 in 1941 He had asked the Department of Health's scientific advisory committee under the chairmanship of Sir John Orr to report as quickly as possible on the causes of this rise and to suggest remedies, and a sub-committee of twelve experts on child health had been coopted Meanwhile the figures so far for this year showed improvement

Against the main block of *infectious diseases*, said Mr Johnston, they were in the main holding their own, particularly over the last pre-war year, 1938 Scarlet fever was down by half, diphtheria was up, although it was down from 1940, enteric fever was up, whooping-cough was also up, and the figure for *measles* was down Of late the average annual notifications of diphtheria were about 10,000 In 1940 they rose to 15,711 In 1941 they had fallen to 13,586, so far in 1942 they were back again to just about 10,000 There were now 73% of school-children immunised in Scotland, and 58% of pre-school children They had traced the conditions as regards immunisation of 428 out of 466 fatal cases of diphtheria among children last year Among the immunised children there was only one death out of about 1000 cases who contracted the disease Among the non-immunised children there were 427 deaths out of about 7000 cases Mr Johnston briefly described the Glasgow smallpox epidemic and said that the population had responded smartly to the medical officer's appeal to be vaccinated

Several MOHs averred that since the war there had been a considerable increase in *venereal disease* in Scotland and the Department of Health were considering whether any further measures of control were possible By all accounts there was a vast and disturbing increase in *scabies*, and the 1941 order giving power to inspect premises and examine and treat persons in a verminous state was now being operated in many parts of Scotland Cerebrospinal fever was still five times the pre-war figure, but in t[illegible] of 1942 it had declined *Tuberculosis* [illegible] an upward tendency, the notifications f[illegible] 800 cases more than in 19[illegible] the health of Scotland [illegible] is an acute domestic fuel [illegible] lies were as necessary [illegible] ance, and he urged local authorities and private citizens to lay in re-of cut timber

In pre-war years Scotland was short of some hospital beds Now as a result of the war the Gover-ment owned in Scotland 9 first-class acute hospitals w 8000 beds and 66 convalescent hospitals with 3800 b which so long as they were not needed for war casualt could be used to reduce the waiting-lists of the v hospitals Already 6000 patients had been dealt w

In the Clyde basin an important experiment preventive medicine was being tried out Any panel patient of 15–25 might be referred to the reg medical service by his panel doctor for specialist nostic assistance, and where necessary treatment convalescence in the State hospitals free of charge T scheme began in January this year and by July so 610 cases difficult to diagnose, and caught perhap in time, had been dealt with The hospital doct recommended the Ministry of Labour to transfer patients to more suitable employment so as to facil a cure He hoped to see this system greatly extend both in age-groups and areas

Housing conditions in Scotland were so terrible th not even in the interests of the war effort could th afford to stop building houses that had been alre begun and accordingly since the outbreak of war nea 28,000 houses had been completed

Mr Johnston found the increase in juvenile del quency alarming There was an increase of 3500 (22%) over 1938 It was disturbing that 6752 of prosecutions were for theft, and 2883 for housebre More than half the children were under 14 No d we must increase our approved schools but he regar these institutions as a confession of the failure of soc to provide playing fields We should use our sch less for training memory and more for training citize

DEBATE ON MINISTER'S STATEMENT

Many members in the debate spoke movingly of t suffering caused by Scotland's housing problem Lie Colonel WALTER ELLIOT said we must face the fact th the curve of tuberculosis notifications is moving ag us It was a disease regarded with great fear but thought it not unreasonable to ask the younger gener of women to accept tuberculosis nursing as a form war service Mr M K MACMILLAN paid a tribute the Minister's effort to establish an irreducible of children's rights and said his nutritional policy inevitably linked with reforms in education

Mr WESTWOOD, the under-secretary, who wound the debate, gave details of areas where local authori or doctors, had refused to work under the scheme f maternity benefit There was no scheme in operati for instance, in Argyll, but a meeting had been arra with the doctors All the doctors in Dumbarton except those in Helensburgh, had agreed to work t scheme In Orkney county the scheme was not operating, but meetings were being held between offi of the Department of Health and the doctors Selkirk county the doctors had refused, but the m was being taken up with the BMA Meetings with doctors had been arranged though the scheme wa yet operating in the following areas Ayr bur Dundee burgh and Kirkcaldy burgh In Clydet burgh a scheme was in operation although only doctors had agreed to give their services In the main doctors had tried to come into the scheme L county had a scheme which was not yet submitted Dumfries burgh the scheme was not in operat and from the City of Edinburgh they had had a sch submitted in draft Glasgow had been allowed to p pone bringing the scheme into operation until Decem It was owing to the action of some doctors t schemes are not everywhere in operation Mr Ma interjected that doctors in Scotland were not a set body of men, and if they objected to doing a they had some good reason for it Surely the Min would try to meet the difficulty Mr WESTWOOD reje that the arrangement had been made with the but that some of the local branches refused to ac the terms arranged by the parent body Cr Mr Westwood said that nearly 5000 members of Civil Nursing Reserve were employed in hospitals 200 nurses were needed for the [illegible] service

QUESTION TIME

Sanatorium Waiting Lists

rd Snell informed Lord Davies on July 8 that on March iere were 1507 people in England and 400 in Wales who been on local authority waiting-lists for institutional ment for tuberculosis for more than ten days In Scot- 652 people had been awaiting admission for more than days

Shortage of Midwives

r D L Lipson asked the Minister of Health if, in view of great shortage, especially in reception areas, of nurses ied to deal with maternity cases, he would enrol a mobile id of nurses who would be willing to go, when required to s where they were most needed —Mr E Brown replied need for relating provision for maternity cases to move its of population has been recognised and the supply of wives in reception areas has been increased by transfer by recall to practice My information is that the ciency is rather in the total number of midwives available n in maldistribution, and I do not think, therefore, that a ile squad would assist

Infected Milk

Ir David Adams asked the Minister whether he was aware t persons suffering loss and damage through illness trace e to infected milk unfit for human consumption had a right iction against vendors of such milk, and whether, as the ncial circumstances of poorer citizens prevented their ing such action, the local authorities in such cases make gratia payments —Mr Brown replied I am aware that ertain circumstances there may be a right of action, but m not aware that local authorities make such payments Adams Does the Minister not consider that the local horities ought to have power to recoup sufferers in their as? Mr Brown It is not quite as simple as that In absence of negligence by the vendor there is not a right of ion in every case (See judgment of the Court of Appeal *Square v Model Farm Dairies (Bournemouth) Ltd.*, *nes Law Report*, 55, p 384) Dr E Summerskill es the Minister not agree that unless he presses for an endment of the national milk scheme, which comes into ration in September, and arranges for the purification of milk, the Government will be morally responsible for the semination of tuberculosis?—Mr Brown Everything being done that is practicable in view of war conditions

Prices of Artificial Limbs

Sir W Womersley informed Mr F J Bellenger that his partment had contracts with manufacturers of artificial limbs d carried out costing investigations to control the prices of abs supplied at public expense —Mr Bellenger Are not ost of the artificial limbs used in Ministry of Pensions spitals supplied by private manufacturers under contract, d is the Minister aware of the wide discrepancy in prices of abs supplied to him and those supplied to members of the iblic?—Sir W Womersley I am responsible for supplying nbs to persons disabled by enemy action and as a business an turned politician I see that we get them at a right and fair ice. Facilities are provided by the committee of Roehamp-n Hospital to deal with civilian cases on good terms

Reproduction Rate

Mr Ivor Thomas asked the Minister of Health whether the cently disclosed increase in the net reproduction rate from 75 to 0 80 represented a real increase in fertility or was only ie result of the fuller information obtained under the Popula-on (Statistics) Act —Mr Brown replied The figure of 0 75 as an approximation only, adopted pending the provision fertility data under the Population (Statistics) Act which ve enabled the net reproduction rate to be more correctly sessed at 0 80

Prosecution of a Medical Author

Mr R W Sorensen asked the Home Secretary whether is attention had been drawn to the recent prosecution of the iedical author and the publishers of an alleged obscene book, hether he was aware that the jury returned a verdict of not uilty and the judge dismissed the case, why the proceedings ere instituted, and whether he was satisfied that those who itiated the prosecution were fully competent to discriminate etween obscenity and the serious consideration of biological nd psychological questions —Mr O Peake replied The ttention of the Home Office having been drawn to this book it was referred to the Director of Public Prosecutions, and after full consideration the prosecuting authorities decided that there was prima facie a case for seeking the decision of a court The book was accordingly submitted to the chief magistrate at Bow Street, who granted process at Common Law against the author and publishers The case was heard at the Central Criminal Court If the suggestion is that acquittal by a court necessarily implies that proceedings ought not to have been taken I am unable to agree —Mr Sorensen Is it not desirable to distinguish between pornography and literature of this kind Mr Peake There is no kind of censorship and in a case of this kind it is impossible to predict with absolute accuracy what the findings of a jury will be I think that in this case both the Home Office and the Director of Public Prosecutions have shown a commendable vigilance

Calling-up of Medical Assistants

Sir Leonard Lyle asked the Minister of Labour whether, in view of the serious shortage of doctors now available for the civilian population, he would allow the maximum leniency with regard to the calling up of their essential staffs, such as dispensing and surgical assistants and secretaries —Mr George Tomlinson replied Arrangements have already been made for safeguarding essential female staff employed by doctors Qualified dispensers are not being withdrawn from their employment and applications for the deferment or retention of secretaries and other assistants are considered individually in the light of their qualifications and the possibility of effecting adequate substitution.

Work on the Fields for Mental Patients

Arrangements have been made for suitable mental patients to be accommodated in hostels and to be employed in agriculture under the directions of county war agricultural executive committees Institutions have also been urged by the Board of Control to organise working parties to help farmers with seasonal work. There are few suitable patients available who are not covered by these arrangements or employed in the institutions' farms and gardens in the production of food for consumption in the institutions (Mr Tom Williams replying to Sir Ralph Glyn)

"FIGHTING FOR WHAT?"

Food, shelter and a job are the three primary necessities of life, and this war will not really have been won until a fair share of these are assured to all peoples in all lands That, in brief, is what we are fighting for, and Sir John Orr points out in a 90-page brochure (Macmillan, 2s 6*d*) that unless the united nations can establish an economic system which will ensure that the food necessary for the world community is produced, exchanged and distributed in accordance with need and not profit there will be no firm foundation for an enduring peace Similarly if proper housing furniture, heating, sanitation and all the amenities of civilised living are made available to all those needing them, and not just to the few who can afford them, more than enough jobs will be created after the war for all those now engaged in the armed forces and the war industries Otherwise these will be demobilised into another peace-time army of unemployed

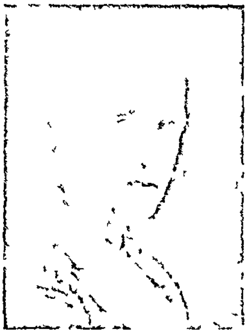
In previous books Orr has directed public attention to the importance of proper nutrition and the prevalence of widespread malnutrition He is not, like some scientists, content to state the facts of his researches and leave it at that He believes that this war has shaken up people's ideas and that we need not go back to the prewar world with its slums, unemployment and poverty People are demanding a policy that will give them freedom from fear and freedom from want, and the book is his attempt to outline the basis of the new world which will secure this Many will read this book with interest and find it the voice of their own aspirations Some may have doubts about the ultimate result of some of his proposals a National Service Corps, for example, would affect workers very differently under socialism and under capitalism The author appears to envisage a marriage of the two regimes He has great faith in the final triumph of what ought to be, but will it be possible to establish the new order simply by wanting a better life for all peoples? We must discover the economic and political causes of our past and present troubles and face them squarely

Obituary

WILLIAM DUNCAN STURROCK

D S O, D M OXFD

Dr W D Sturrock who died in Oxford on June 29, was with the late F G Proudfoot, an original medical officer of the maternity department of the Radcliffe, and its success as a local hospital service owes a great deal to his work in and for it He was the chief obstetrical opinion and practitioner in Oxford and the surrounding district up to four years ago, when ill-health forced him to curtail his practice His hospital work he performed devotedly until a few months before the end


Lafayette

Sturrock was born in 1880, the son of John Sturrock, ICS, and educated at Charterhouse and Magdalen College, Oxford He obtained a first class in the school of natural science (physiology) and qualified in 1905 from King's College Hospital where he later served as house-physician He then joined Dr W T Brooks in practice in Oxford For his service in France and in Macedonia during the last war he was awarded the DSO in 1918, and he was three times mentioned in dispatches On his return to Oxford he succeeded Dr Brooks as medical officer to Radley College, and later was also appointed medical officer to the Dragon School Oxford In both schools his work was a model of diligence and attention to detail, but indeed nothing he did was showy or shoddy

Sturrock had great charm and kindliness, as his patients well knew But he never pushed himself forward and he had an elusive quality which made him difficult to know intimately He married in 1909 Mary, daughter of Ivor Macpherson of New Court, Topsham, and his only son, Jan Sturrock, is now serving in the Sappers

CECIL JAMES MILLIGAN

B A CAMB, M R C S, SURGEON LIEUTENANT R N V R

Cecil Milligan the son of Dr Wyndham Milligan of Brook Street, W 1, lost his life last November when HMS *Dunedin* was sunk He was born in 1909 and educated at Sherborne, where he was in the late G M Carey's house In 1927 he went to Caius College, Cambridge, and after graduating in 1930 he spent four years in business before beginning his medical studies at University College Hospital It was his ambition to join his father in his practice and his friends thought his sincerity and sympathy fitted him for the work he had chosen Having qualified in 1939 he was appointed RMO at Ashford Hospital and when he returned to London at the beginning of 1940 he became temporary physician to Margaret Street Chest Hospital In June of that year he married Enid Margaret Paull, of Banchory, and soon afterwards was gazetted lieutenant surgeon in the RNVR

Strachan, Aberdeen

WALTER ROSS JORDAN

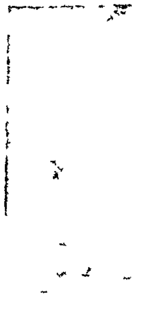
M D LOND

Dr Jordan, who died on June 13, was a member of a brilliant family of physicians and surgeons which, for a period of eighty years, has been intimately connected with the hospital work of Birmingham Although he himself was visiting physician to the Birmingham Municipal Infirmary (now Dudley Road Hospital), his high reputation rested on his work as physician to the Children's Hospital a position which he held for 27 years, and as examiner (like his father before him) for lunacy cases before the Birmingham magistrates was a good clinician, had a love for children and gained their affection, they were attracted by this distinguished-looking and courtly gentleman as his colleagues Jordan had a great sense of h was an excellent after-dinner speaker with a sarcasm that always amused and never repelled hearers He was also a good committee man, and present high standard of the children's hospital much to his clinical and business ability He educated at King Edward's School and Mason C qualifying MB Lond from Queen's College in 1 Throughout his life his old school was one of his interests, he was appointed a governor in the 1917 and remained one until his death and he bailiff of the foundation in 1929 and again in 1940 loved good literature and art and was twice p of the Birmingham Library In politics he was a long Liberal, not always an easy faith to cling to Birmingham He died at the age of 78, a man to whom his younger colleagues looked up with a respect and admiration bordering on veneration

JOHN WENLOCK ASHLEY

B M OXFD, SURGEON LIEUTENANT R N V R

THE Admiralty have posted Dr John Ashley "missing presumed killed on active service,' d June He was born at Tenbury, Worcs in 1914, son of Mr L Ashley, a local solicitor When he Bromsgrove school in 1933 he went to Worcester College, Oxford, where he was awarded a Theodore Williams scholarship for human anatomy He graduated BA with second-class honours in 1936 and won an open scholarship to the Middlesex Hospital He qualified in 1939, taking his medical degree the same year, and volunteered at once for the RNVR, and after holding a house-appointment at Hove General Hospital he was called up three months after the outbreak of war and posted to HM Destroyer *Imogen* In July 1940 he was seriously injured when his ship was sunk by a collision in a fog and after he recovered he held shore appointment at Portsmouth till March of last ye when he was appointed to HMS *Hermione*


Wright & Logan,

Infectious Disease in England and Wales

WEEK ENDED JULY 4

Notifications —The following cases of infectious dis were notified during the week smallpox, 0, scar fever, 1396, whooping-cough, 1457, diphtheria, 72 paratyphoid, 14, typhoid, 4, measles (exclu rubella), 7581, pneumonia (primary or influenzal), 73 puerperal pyrexia, 161, cerebrospinal fever, 10 poliomyelitis, 7, polio-encephalitis, 2, enceph lethargica, 6, dysentery, 242 (100 at Penrith), ophthal neonatorum, 83 No case of cholera, plague or typh fever was notified during the week

The number of civilian and service sick in the Infectious Ho p of the London County Council on July 1 was 1624, includ scarlet fever, 172 diphtheria, 147, measles 410 whoopi cough 298 enteritis 57 chicken pox 77, erysipelas mumps 60 poliomyelitis 1 dysentery 32, cerebrospinal f 11 puerperal sepsis 18 enteric fevers, 4 german measle other diseases (non infectious), 169 not yet diagnosed, 56

Deaths —In 126 great towns there were 1 (0) dea from an enteric fever, 3 (0) from scarlet fever, 5 (1) fr measles, 7 (0) from whooping-cough, 17 (2) from di theria, 30 (2) from diarrhœa and enteritis under t years, and 11 (0) from influenza The figures parentheses are those for London itself

Ilford reported the fatal case of an enteric fever The boro of Heston and Isleworth Liverpool Sunderland and Birming each reported 4 deaths from diarrhœa

The number of stillbirths notified during the w was 227 (corresponding to a rate of 36 per thousand to births), including 20 in London

Letters to the Editor

DOSAGE OF LOCAL ANÆSTHETICS

,—In your last issue Dr Organe put on record the consequences which may follow the use of doses of local anæsthetics He seems himself g to countenance doses which, although much er than the ones used originally, appear to us still cessarily large The makers of 'Percaine' state that maximal therapeutic dose in man is 2–3 mg per ' and on this basis it may not be dangerous to give cm of 1 1000 percaine (i e , 150 mg) to a 10-stone ; but we do know that satisfactory operating itions following intercostal, abdominal or brachial- is block can be obtained with a considerably less itity of 1 2000 or 1 3000 percaine , while for the nsive nerve blocks preceding laryngectomy we use, routine, a total of 60 c cm of 1 2000 percaine for a ent weighing 10 stone—i e , a dosage of ½ mg /kilo or ig

commonly accepted standard for a full dose of aine (synonyms 'Novocain,' 'Planocaine,' 'Sevi- e,' *et al.*), given intrathecally for upper abdominal sthesia in an adult, is 200 mg , for percaine 15 c cm . 1500 dilution—i e , a total of 10 mg From this it be seen that satisfactory anæsthesia is obtained from aine in a twentieth of the dose needed for procaine local anæsthesia 100 c cm of 1% solution of procaine 1 g. of procaine) is commonly taken as a standard dose for an adult A dose of percaine equivalent to would be 50 mg , or a third the quantity of percaine h Dr Organe would be ready to give to a 10-stone

e suggest that for local anæsthesia percaine should ly be used in concentrations exceeding 1 2000 and seldom is a dose in excess of 50 mg necessary

R R MACINTOSH,
ford FREDA B BANNISTER

CONSIDERATE TONSILLECTOMY

R,—In your leading article of June 27 you advocate ting children requiring tonsillectomy as inpatients advantages are obvious , during all the years I was geon in charge of the department at the Bristol Royal rmary I made inpatient treatment my rule But no obvious is the increase in the expense, as compared h outpatient treatment , and a community impover- d by war may well have to consider whether the antage is commensurate When the weather is m, ambulance transport provided, home conditions d, and nursing and if needed medical attendance ilable, the disadvantages of treating the majority of se cases in the outpatient department are not very at , and we may have to decide that beds must be erved for patients whose need is greater As to medication, is it not rather a luxury than strictly essary ? The operation is so common that most ldren come up reassured by experienced comrades t there is nothing to fear—I have long ceased to rvel at their docility in the anæsthetic room Very, y rarely does a child object to examination after the ration or show other signs of having been frightened , l while I can show several cases in which enuresis or ht terrors ceased after operation I do not recall one which they began then

ou mention "the older method," suspected of being her crude The older method is a formal dissection, h volsellum and scissors , some surgeons, I believe, n expect suspension and intratracheal anæsthesia king it definitely a major operation For the occa- al operator this is doubtless the method of choice e modern method is that described by Whillis and bus (*Lancet*, 1910, ii, 875) A very blunt guillotine is d to evert and to hold the tonsil during the dissection , resulting removal is complete and exact, with imal bleeding and no interference with the fascia ering the muscles It demands practice and a certain ack, apparently not readily acquired by those of riper rs, and it is of British origin These drawbacks are weighed by its simplicity, the short time needed, and relative absence of pain after operation , and it has ablished itself as the routine method for those who have to carry out several hundred such operations year after year.

I venture to make this point since we still meet those who, impressed by the often elaborate ritual of volsellum dissection, and perhaps prejudiced by the odium which in the opening years of the century attached to the guillotine (*cf* Hey Groves, E W "The advantages of enucleation of the tonsils over removal by guillotine," *Bristol med-chir J* 1905, 23, 32), fail to appreciate the merits, surgical and economic, of the modern procedure

Bristol 8 E WATSON-WILLIAMS

THE THIRD DIMENSION IN DIAGNOSIS

SIR,—Of two interesting articles which appeared in your columns this year, one (Cook and Sargant, Jan 10, p 31) demonstrated the unfortunate results of mistaking nervous disorders for organic disease , the other (Hulbert, May 23, p 614) showed the unhappy effects of mistaking organic disease for nervous disorder Both were written with proper scientific restraint and relied on the objectivity of case-records to substantiate their separate points of view. Each article solidly proved its case This was perhaps the less difficult in that the truth of both theses was in any event self-evident

I suggest that the real point lies a little deeper In my own area in recent weeks I have come across two cases from EMS hospitals which are typical examples of one side of the question The first was a case of blatant hysteria, with massive areas of analgesia, which was diagnosed, on the basis of a visible pulsation in the neck, as arteriovenous aneurysm of the left innominate artery, and operated upon—no aneurysm being found The second was a case of enuresis with the history and symptomatology of a typical anxiety neurosis, which was treated by excision of the left seminal vesicle on the grounds that it was larger than the right ! It may be added that these instances are by no means exceptional The suggestion I have to make is that such astonishing gaffes are not adequately countered by the production of cases treated with equal folly by psychiatrists The " tu quoque " is always a juvenile rejoinder, even when clothed in statistics Moreover the circumstances are not parallel When a psychiatrist misses the symptom-syndrome of a physical disease for, say, three months, he makes what is admitted by everyone, including himself, to be a serious error , and articles are scarcely needed to prove the liability of human beings to make serious errors But when physicians or surgeons miss a classical case of anxiety neurosis, and investigate it for three months, to its lasting detriment, with every known variety of diagnostic apparatus, they are said to be " eliminating the possibilities of physical disease " It is precisely this attitude that demands an explanation , and admits, I suggest, of only one They are applying a two-dimensional concept to a three-dimensional problem Their efforts resemble those of intelligent two-dimensional creatures striving to comprehend a cube

The psychiatric approach is not solely another department to which certain cases are to be relegated , it also supplies a new and vital factor in *every* case, not alternative to the picture presented by medicine and surgery but enriching that picture by addition of the human perspective The truth is that psychiatry has two aspects Out of the lack of a general recognition of this fact spring most of the futile disputes centring round its function. From one aspect it is indeed a definable specialty of medicine, though not of neurology, with which it has neither more nor less connexion than has neurology with the other specialties. From the other it is itself the offshoot of a new direction of the human mind, a direction discernible in many fields besides our own , and from this aspect it is applicable to every branch of our profession From this latter aspect the psychiatric approach is neither more important nor less important than a new dimension of human measurement, meaningless without reference to the other dimensions, as they, without reference to it, are incomplete Spatially expressed, where medicine is the height and surgery is the length, psychiatry is the depth of the human box of tricks

This concept implies, as relativity did to Newtonian physics, a mental readjustment to matters long considered professionally settled But the older ideas are thereby extended, not dispossessed The apple still falls on the philosopher's head in spite of Einstein, and the knife will continue to fall on the gangrenous appendix in spite of the psychiatric approach Nevertheless, like the picture of the universe, the picture of the sick person is not what it was Something has been added, comparable only to a stereoscopic effect I suggest that the complete acceptance—lacking even in some psychiatrists—of this fundamental reorientation will put an end, in those cases whose neurosis is manifest, to what may be called the laborious elimination of the inherently improbable But it will do more Its inclusion in our normal modes of reasoning will immeasurably enrich the possibilities of therapy, and open up a way for fresh advances of medicine in line with the new direction of thought

Aldershot ? ALAN MCGLASHAN

PHLYCTENULAR OPHTHALMIA

SIR,—The annotation in your issue of July 4 referring to Mr Sorsby's interesting work concludes by mentioning the evidence "that tuberculous infection can act as the sensitising agent of phlyctenular ophthalmia" and in the last sentence states "If so, sufferers from phylctens must be regarded as in a dangerous state of health and needing antituberculous treatment" Pædiatricians have long regarded phlyctens as similar to erythema nodosum—both hypersensitivity phenomena, and frequently tuberculin is the sensitising agent In both instances the practical point is that the child with erythema nodosum or with phlyctens may come from an environment in which an unsuspected case of open pulmonary tuberculosis exists and in every instance a search for such contact should be made I suspect—but my evidence is yet small—that both these hypersensitivity phenomena occur with intermittent, small dosage of infection Children with phlyctens are seldom "in a dangerous state of health" but they may be in a dangerous environment and other members of the family or other children in the same school class (e g, with a tuberculous teacher) may not be so lucky Their dosage may result in tuberculous meningitis or miliary tuberculosis. In my view every child with a phlycten should be tested with 0 1 c cm of 1 to 10,000 old tuberculin If strongly positive to this weak dilution then a tuberculous origin for their eye trouble is highly probable and the search for the source of infection should be energetically pursued

An EMS Hospital ALAN MONCRIEFF

SMELL FROM PLASTERS

SIR,—Professors Seddon and Florey state that when the closed plaster technique is used a practically sterile wound is comparatively rare, thus implying that most open wounds treated in this way become septic Happily most of the wounds reaching us here could be treated by radical excision within six hours of the time of injury During the five months that I have been attached to this accident service I have not seen a pus-soaked plaster among fifty-odd cases admitted with open wounds treated by closed plaster, and I have known only one wound to become septic The smell that does emanate from the plaster is that of dried blood and has not aroused comment except in two cases, neither of which needed interference

The Radcliffe Infirmary
Accident Service G MARIANI

SOLDIER'S DOCTOR

SIR,—Your leader makes one wonder whether the writer has ever been a regimental MO or has merely read about it in books Let him lay aside his rose-coloured spectacles for a moment and consider the facts "The task of keeping a thousand men fit" would, I agree, be a fascinating one if the MO had the same thousand men under his professional care for any length of time, but the snag is that the men—and the MO—are always liable to be moved elsewhere at short notice, thus, there is no security of tenure, no permanency in the doctor-patient relationship As for "the great variety of practice," it simply does not exist, the types of illness and injury seen (when not in action) are extremely limited in range and, if anything of real interest crops up, the patient is forthwith admitted to a hospital often a long way away so that the MO must lose sight Moreover, on discharge from hospital, the pa like as not posted to another unit and so passes MO's ken for ever It is true that, within narrow there is scope for preventive medicine, but the MO takes an undue interest in trivial illnesses will soon his sick parades growing in numbers, which is frowned upon by the combatant authorities " and confidence" in the soldier are best main discouraging him from making a fuss Of hospitals I know nothing, but I would be grateful for list of these mysterious ailments which can be " in the bud" It is idle to deny that the job of re MO is conducive to apathy Many MO's become bored that they will not even attend refresher arranged for them unless compelled to do so It is the strongest spirits who can maintain their and energy in such circumstances When the unit action, of course, it is quite another matter

Crediton, Devon L N JACKSON

A THOUSAND YEARS OF ŒSTRIN THERAP

SIR,—Endocrine treatment is generally considered advance of the last forty years or so While the direct experimental evidence for the existence of secretions of any kind was furnished by Berthold 1849 by means of testicular transplants in animals, endocrine extracts were advocated in the ninete Brown-Séquard for rejuvenation, it was only in that the first successful transplantation for purposes was carried out by Morris with ovarian and the potency of organ extracts was not scie demonstrated until 1912 when Alder induced mice by means of aqueous ovarian extracts

Œstrin therapy, however, was practised in the century Going through "Ortus Sanitatis," an pharmacopœia by an unknown author, first pub 1494 by Jacobus von Meydenbach in Germany, I struck by a quotation from "Haly" Fimus equ vaporietatis fœtuos mortuum mulieri fecundinam (The excrement of horses when evaporated brings the delivery of dead fœtuses of a pregnant w *NB*—The bad Latin is original) The Persian, ben Abbas, who died in A D 994, was court physician the Buwide Emir Adhad ad-Daula and dedicated to ruler under the title "Al-Maliki" (The Royal Book) work which was the canonical treatise on medicine for century until it was superseded by Avicenna's Translated into Latin in 1080 by Constantinus it went through a series of editions, the principal being the Venetian of 1492 and that of Lyon of 15

The empirical use by Haly ben Abbas of eva horse's urine for inducing stillbirth is interesting in light of the recent discovery of Zondek that the urine pregnant mares and stallions is one of the richest so œstrin available, and the work of Knaus showing that the oxytocic principle of the posterior pituitary is to on the uterus, the latter must have been pre sensitised with large doses of œstrin

St Catherine's Society,
Oxford PETER P H SCHMIDT

REACTIONS TO THE REPORT

SIR,—The planning of the future health services a state of complete confusion The BMA P Commission in its interim report rejects state m in a state-salaried service The Medical Practi Union is endeavouring to formulate a state medical for approval by the Government The National H Association (headquarters at Tunbridge Wells) is pl a local government scheme administered by committees Doubtless many others are also p schemes Before going any further the Gov should state, without any equivocation, what it us to plan This is essential, since it either will or not cover two professional imponderables—freedom choice of doctor and patient, and compensation for invested in practices The second must be cl before any steps can be taken As I see the either the Government has not said what it wants or planning commission has kept the wishes of the Go ment from the profession. Probably a full state was put up to the commission by the Government they would not have plann ection The ssion should have been given the opportunity of g on it before the commission rejected a full state e It may be asked whether the MPU have com- with governmental wishes or instructions in en- ouring to formulate plans for a full state service, whether the planning commission, with or without backing of a majority of the profession, rejected wishes of the Government If so the commission wait to find out the reactions of the Government e doing any further planning Again I ask, what ve supposed to be planning?

RURAL G P.

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MEDICAL DIRECTORY 1943

,—To maintain the accuracy of our annual volume ly upon the return of our schedule, which has been d to each member of the medical profession ld the schedule have been lost or mislaid we will y forward a duplicate upon request The full names e doctor should be sent for identification

, Gloucester Place, W 1   J & A CHURCHILL Ltd

Notes and News

PLAN OR NO PLAN?

as seems likely, research will be supported more and by public money it is well for the public to under- how to ensure a good return for their money. In ast, of course, the support has been quite inade- , thus J. D Bernal[1] estimates that, in 1934, gross amount spent by Government on medical rch was £150,000, probably less, he adds, than a of what would be reasonable and desirable in any sed country But a more lavish expenditure can elcomed only if it goes hand in hand with wise nistration, and the use of the products of research e common good Dr Alan Gregg,[2] who is director nedical sciences at the Rockefeller Foundation, ore than doubtful about short-term policies in the ing of research Far better to endow institutes laboratories well, for it is notoriously difficult to gnise research ability at an early stage A short- grant might give the aspirant a period of probation uch to establish a claim to more permanent support; much money is squandered in this way, and it might ise to test a would-be researcher by other means— xample, as an apprentice or student assistant to some e seasoned worker in medical school or university levote funds solely to research which seems to be of tical use is futile, as both Gregg and J R Baker[3] t out Baker, scenting danger in "planning" and e control, urges that the researcher must have com- e liberty to pursue his work without political influence aterference Few would wish to dispute his belief , "in science there is no loyalty to creed, party or only to demonstrable truth and reason" But dread of an approaching state dictatorship over the jects and methods of research seems unfounded, egin with, any such tyranny could only be achieved he cost of revolutionary changes in the present con- t and policy of the Medical Research Council, and many important discoveries have been made by vidual workers that they may well claim the right ursue their ways undisturbed But as an inevitable lt of growing specialisation, there is growing room team-work too, especially when the research is well nned and the members of the team have combined, as a result of outside pressure, but by mutual consent

A DOUBLE STETHOSCOPE

HE Bin-Aural Comparator manufactured by the ac Company (2 Ullswater Road, London, S W 13), useful, if massive, form of stethoscope which makes ossible to compare simultaneously the sounds over two areas of the lungs or heart The two chest es, made of aluminium alloy, each consist of a special ular diaphragm contained in a small chamber to which either a conical or a concave end-piece can be attached The head frame is a self-adjusting model which can be fixed in any desired position by means of a milled clamping nut The instrument has the additional advantage that it can be converted into an ordinary type of stethoscope It transmits respiratory and heart sounds satisfactorily without distortion, but there may be some who will find difficulty in analysing the sounds transmitted to the ear simultaneously from two different areas of the chest

Royal College of Surgeons of England

At a meeting of the council held on July 9, Sir Alfred Webb-Johnson was re-elected president and Surgeon Rear-Admiral Gordon-Taylor and Mr L R Braithwaite vice presidents

The following were elected for the ensuing year

Hunterian professors—Mr W H Bowen etiology of acute appendicitis, Mr H T Roper Hall, premaxillary cysts, Dr L H Savin, surgery of non magnetic intraocular foreign bodies, Mr J Cosbie Ross, injuries of the urinary bladder, Dr Raymond Greene, frostbite and kindred conditions, Mr S M Cohen, traumatic arterial spasm Mr J. E A O'Connell, vascular factor in the cerebrospinal fluid circulation and its relationship to intracranial pathological processes, Mr O. S Tubbs, effect of ligation on infection of the patent ductus arteriosus, Mr Alexander Weddell, cutaneous innervation, and Mr W Bremner Highet, injuries to peripheral nerves

Arris and Gale Lecturer—Prof H A Harris, anatomy of posture in industry clinical anatomy of the veins and relation of the lymphatic system to the arterial and venous systems

Erasmus Wilson Demonstrators—Mr L E C Norbury, Mr R Davies Colley, Mr C E Shattock, and Mr C P G Wakeley

Arnott Demonstrator—Dr A J E Cave

Sir Frank Colyer was re appointed honorary curator of the odontological collection The thirteenth Macloghlin scholarship was awarded to J A G Holt, of Bristol Grammar School, and Miss H B Collard, BA, was re appointed a Leverhulme scholar for a further year

It was decided to recognise the posts of senior house-surgeon and first assistant house surgeon at the Essex County Hospital, Colchester, for the six months' surgical practice required of candidates for the final fellowship examination and to renew the recognition of the post of house surgeon at the Walsall General Hospital for the duration of the war

A diploma of fellowship was granted to R S Lawrie, MB Lond, MRCP, and a diploma of membership to J. A Judson (Leeds) The following diplomas were granted jointly with the Royal College of Physicians·

D P H—Raghunath Bhaskar, P R T Naidu, William Dodd

D P M—J F Cooper, Harry Fleming, Gerald Garmany, Margaret J Garmany, J H Gould, Samuel Leviten, Patrick Morris, John Slorach and P C C Tresise

D.L O—J A. Harpman C M Johnston, Ernest Kaplan, E C Richardson, and Ernst Rosenbaum

University of Aberdeen

On July 9, the following degrees and diplomas were conferred

M.D—A H Cruickshank (*in absentia*) with highest honours, and D A Hunter with commendation

M B, Ch B—A L C Stalker (with first-class honours), John Mowatt (with second-class honours), Alexander Adam, Mary R Alexander, R. M Allan, Edwin Anderson, R M L Anderson, H I C Bowie Inez M Brebner, D D Brown, I. M Brown A. P Buchan, I J Buchan, Mary S Buchan, Neil Budge, James Cantlie, T L Carr, J R W Catto Isabel M S Chalmers, I G L Craig, J L T Dickie Margaret S Duguid D M Dunbar, Lorna L Duncan, Eileen M Duthie, G W Forbes, Helen S Fraser, Leslie W Fraser, W G French, Robert Gibb, Isobel R Grattidge, John Gray A M Gwynn, Muriel O Henderson, G L Herbert, **Eilean** ter, J G Hunter, T O'N F Kelly, Margaret C law Agnes K Leslie J C Lightbody, R K Donald W H McGillivray, W B McC J M McKay, A A Mackie, A H McLaren, Muriel M McLean Alexander Mair, V D Meadows D G Milne, J G Murray, Cecilia Alma C Ritchie, Mary B Robb, A. F Ross, Ross, I L Roy, L S Rusack J K Sinclair, Emily S Smith, E B Smith, J Strachan, Cecilia V Urquhart, Andrew W A Walker, William Watt, Dorothy and J H Wood.

D.P.H—Mary Anderson, C T Bayne D Davidson.

University of Bristol

At recent examinations the fo

FINAL EXAMINATION

G H Valentine and G H Wattley Nancy R. Baldwin R F Brooks, John Deighton, G F M Hall, Joyce E W Moore, J L Pardoe A. R Thomas, Jean Wallace and G A W

In Group II (*completing the* A H M Oakes sidered professionally settled But the older ideas are thereby extended, not dispossessed The apple still falls on the philosopher's head in spite of Einstein , and the knife will continue to fall on the gangrenous appendix in spite of the psychiatric approach Nevertheless, like the picture of the universe, the picture of the sick person is not what it was Something has been added, comparable only to a stereoscopic effect I suggest that the complete acceptance—lacking even in some psychiatrists—of this fundamental reorientation will put an end, in those cases whose neurosis is manifest, to what may be called the laborious elimination of the inherently improbable But it will do more Its inclusion in our normal modes of reasoning will immeasurably enrich the possibilities of therapy, and open up a way for fresh advances of medicine in line with the new direction of thought

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[1] The Social Function of Science London 1939

[2] The Furtherance of Medical Research New Haven Yale University Press, London Humphrey Milford, Oxford University Press Pp 129 12s

[3] The Scientific Life. London George Allen and Unwin Pp 154 7s 6d

Aldershot ALAN McGLASHAN

PHLYCTENULAR OPHTHALMIA

SIR,—The annotation in your issue of July 4 referring to Mr Sorsby's interesting work concludes by mentioning the evidence " that tuberculous infection can act as the *sensitising agent of phlyctenular ophthalmia " and in the* last sentence states " If so, sufferers from phlyctens must be regarded as in a dangerous state of health and needing antituberculous treatment " Pædiatricians have long regarded phlyctens as similar to erythema nodosum —both hypersensitivity phenomena, and frequently tuberculin is the sensitising agent In both instances the practical point is that the child with erythema nodosum or with phlyctens may come from an environment in which an unsuspected case of open pulmonary tuberculosis exists and in every instance a search for such contact should be made I suspect—but my evidence is yet small—that both these hypersensitivity phenomena occur with intermittent, small dosage of infection Children with phlyctens are seldom " in a dangerous state of health " but they may be in a dangerous environment and other members of the family or other children in the same school class (e g , with a tuberculous teacher) may not be so lucky Their dosage may result in tuberculous meningitis or miliary tuberculosis In my view every child with a phlycten should be tested with 0 1 c cm of 1 to 10,000 old tuberculin If strongly positive to this weak dilution then a tuberculous origin for their eye trouble is highly probable and the search for the source of infection should be energetically pursued

An EMS Hospital ALAN MONCRIEFF

SMELL FROM PLASTERS

SIR,—Professors Seddon and Florey state that when the closed plaster technique is used a practically sterile wound is comparatively rare, thus implying that most open wounds treated in this way become septic Happily most of the wounds reaching us here could be treated by radical excision within six hours of the time of injury During the five months that I have been attached to this accident service I have not seen a pus-soaked plaster among fifty-odd cases admitted with open wounds treated by closed plaster , and I have known only one wound to become septic The smell that does emanate from the plaster is that of dried blood and has not aroused comment except in two cases, neither of which needed interference

The Radcliffe Infirmary
Accident Service G MARIANI

SOLDIER'S DOCTOR

SIR,—Your leader makes one wonder whether the writer has ever been a regimental MO or has merely read about it in books Let him lay aside his rose-coloured spectacles for a moment and consider the facts " The task of keeping a thousand men fit " would, I agree, be a fascinating one if the MO had the same thousand men under his professional care for any length of time, but the snag is that the men—and the MO—are always liable to be moved elsewhere at short notice , thus, there is no security of tenure, no permanency in the doctor-patient relationship As for " the great variety of practice," it simply does not exist , the types of illness and injury seen (when not in action) are extremely limited in range and, if anything of real interest crops up, the patient is forthwith admitted to a hospital often a long way away so that the MO must lose sight of him Moreover, on discharge from hospital, the patient is as like as not posted to another unit and so passes from the MO's ken for ever It is true that, within narrow limits, there is scope for preventive medicine, but the MO who takes an undue interest in trivial illnesses will soon find his sick parades growing in numbers, which is rightly frowned upon by the combatant authorities " Poise and confidence " in the soldier are best maintained by discouraging him from making a fuss Of military hospitals I know nothing, but I would be grateful for a list of these mysterious ailments which can be " nipped in the bud " It is idle to deny that the job of regimental MO is conducive to apathy Many MO's become so bored that they will not even attend refresher courses arranged for them unless compelled to do so It is only the strongest spirits who can maintain their interest and energy in such circumstances When the unit is in action, of course, it is quite another matter

Crediton, Devon L N JACKSON

A THOUSAND YEARS OF ŒSTRIN THERAPY

SIR,—Endocrine treatment is generally considered an advance of the last forty years or so While the first direct experimental evidence for the existence of internal secretions of any kind was furnished by Berthelot in 1849 by means of testicular transplants in animals, and endocrine extracts were advocated in the nineties by Brown-Séquard for rejuvenation, it was only in 1895 that the first successful transplantation for clinical purposes was carried out by Morris with ovarian tissue, and the potency of organ extracts was not scientifically demonstrated until 1912 when Alder induced œstrus in mice by means of aqueous ovarian extracts

Œstrin therapy, however, was practised in the 10th century Going through " Ortus Sanitatis," an old pharmacopœia by an unknown author, first published in 1494 by Jacobus von Meydenbach in Germany, I was struck by a quotation from " Haly " Fimus equorum si vaporietatis fœtuos mortuum mulieri fecundinam educit (The excrement of horses when evaporated brings about the delivery of dead fœtuses of a pregnant woman *NB*—The bad Latin is original) The Persian, Haly ben Abbas, who died in A D 994, was court physician to the Buwide Emir Adhad ad-Daula and dedicated to that ruler under the title " Al-Maliki " (The Royal Book) a work which was the canonical treatise on medicine for a century until it was superseded by Avicenna's Canon Translated into Latin in 1080 by Constantinus Africanus it went through a series of editions, the principal ones being the Venetian of 1492 and that of Lyon of 1529

The empirical use by Haly ben Abbas of evaporated horse's urine for inducing stillbirth is interesting in the light of the recent discovery of Zondek that the urine of pregnant mares and stallions is one of the richest sources of œstrin available, and the work of Knaus showing that, if the oxytocic principle of the posterior pituitary is to act on the uterus, the latter must have been previously sensitised with large doses of œstrin

St Catherine's Society,
Oxford PETER P H SCHMIDT

REACTIONS TO THE REPORT

SIR,—The planning of the future health services is in a state of complete confusion The BMA Planning Commission in its interim report rejects state medicine in a state-salaried service The Medical Practitioners Union is endeavouring to formulate a state medical service for approval by the Government The National Health Association (headquarters at Tunbridge Wells) is planning a local government scheme administered by insurance committees Doubtless many others are also planning schemes Before going any further the Government should state, without any equivocation, what it wants us to plan This is essential, since it either will or will not cover two professional imponderables—freedom of choice of doctor and patient, and compensation for capital invested in practices The second must be cleared up before any steps can be taken As I see the position either the Government has not said what it wants or the planning commission has kept the wishes of the Government from the profession Probably a full state service was put up to the commission by the Government, or they would not have planned its rejection The whole profession should have been given the opportunity of voting on it before the commission rejected a full state service It may be asked whether the MPU have complied with governmental wishes or instructions in endeavouring to formulate plans for a full state service, and whether the planning commission, with or without the backing of a majority of the profession, rejected the wishes of the Government If so the commission must wait to find out the reactions of the Government before doing any further planning Again I ask, what are we supposed to be planning ?

RURAL G P.

Essex

MEDICAL DIRECTORY 1943

SIR,—To maintain the accuracy of our annual volume we rely upon the return of our schedule, which has been posted to each member of the medical profession Should the schedule have been lost or mislaid we will gladly forward a duplicate upon request The full names of the doctor should be sent for identification

104, Gloucester Place, W 1 J & A CHURCHILL Ltd

Notes and News

PLAN OR NO PLAN?

IF, as seems likely, research will be supported more and more by public money it is well for the public to understand how to ensure a good return for their money In the past, of course, the support has been quite inadequate, thus J. D Bernal[1] estimates that, in 1934, the gross amount spent by Government on medical research was £150,000, probably less, he adds, than a tenth of what would be reasonable and desirable in any civilised country But a more lavish expenditure can be welcomed only if it goes hand in hand with wise administration, and the use of the products of research for the common good Dr Alan Gregg,[2] who is director for medical sciences at the Rockefeller Foundation, is more than doubtful about short-term policies in the planning of research Far better to endow institutes and laboratories well, for it is notoriously difficult to recognise research ability at an early stage A short-term grant might give the aspirant a period of probation in which to establish a claim to more permanent support; but much money is squandered in this way, and it might be wise to test a would-be researcher by other means—for example, as an apprentice or student assistant to some more seasoned worker in medical school or university To devote funds solely to research which seems to be of practical use is futile, as both Gregg and J R Baker[3] point out Baker, scenting danger in "planning" and state control, urges that the researcher must have complete liberty to pursue his work without political influence or interference Few would wish to dispute his belief that "in science there is no loyalty to creed, party or class only to demonstrable truth and reason" But his dread of an approaching state dictatorship over the subjects and methods of research seems unfounded, to begin with, any such tyranny could only be achieved at the cost of revolutionary changes in the present conduct and policy of the Medical Research Council, and so many important discoveries have been made by individual workers that they may well claim the right to pursue their ways undisturbed But as an inevitable result of growing specialisation, there is growing room for team-work too, especially when the research is well planned and the members of the team have combined, not as a result of outside pressure, but by mutual consent

A DOUBLE STETHOSCOPE

THE Bin-Aural Comparator, manufactured by the Capac Company (2 Ullswater Road, London, S W 13), is a useful, if massive, form of stethoscope which makes it possible to compare simultaneously the sounds over any two areas of the lungs or heart The two chest pieces, made of aluminium alloy, each consist of a special annular diaphragm contained in a small chamber to which either a conical or a concave end-piece can be attached The head frame is a self-adjusting model which can be fixed in any desired position by means of a milled clamping nut The instrument has the additional advantage that it can be converted into an ordinary type of stethoscope It transmits respiratory and heart sounds satisfactorily without distortion, but there may be some who will find difficulty in analysing the sounds transmitted to the ear simultaneously from two different areas of the chest

Royal College of Surgeons of England

At a meeting of the council held on July 9, Sir Alfred Webb-Johnson was re elected president and Surgeon Rear-Admiral Gordon-Taylor and Mr L R Braithwaite vice-presidents

The following were elected for the ensuing year

Hunterian professors—Mr W H Bowen, etiology of acute appendicitis, Mr H T Roper-Hall premaxillary cysts, Dr L H Savin, surgery of non-magnetic intraocular foreign bodies, Mr J Cosbie Ross injuries of the urinary bladder, Dr Raymond Greene, frostbite and kindred conditions; Mr S M Cohen, traumatic arterial spasm Mr J E A O'Connell, vascular factor in the cerebrospinal fluid circulation and its relationship to intracranial pathological processes, Mr O S Tubbs, effect of ligation on infection of the patent ductus arteriosus, Mr Alexander Weddell, cutaneous innervation, and Mr W Bremner Highet, injuries to peripheral nerves

Arris and Gale Lecturer—Prof H A. Harris, anatomy of posture in industry clinical anatomy of the veins and relation of the lymphatic system to the arterial and venous systems

Erasmus Wilson Demonstrators—Mr L E C Norbury, Mr R. Davies Colley, Mr C E Shattock, and Mr C P G Wakeley

Arnott Demonstrator—Dr A J E Cave

Sir Frank Colyer was re appointed honorary curator of the odontological collection The thirteenth Macloghlin scholarship was awarded to J A G Holt, of Bristol Grammar School, and Miss H B Collard, BA, was re appointed a Leverhulme scholar for a further year

It was decided to recognise the posts of senior house-surgeon and first assistant house surgeon at the Essex County Hospital, Colchester, for the six months' surgical practice required of candidates for the final fellowship examination and to renew the recognition of the post of house-surgeon at the Walsall General Hospital for the duration of the war

A diploma of fellowship was granted to R S Lawrie, MB Lond, MRCP, and a diploma of membership to J. A Judson (Leeds) The following diplomas were granted jointly with the Royal College of Physicians.

D P H—Raghunath Bhaskar, P R T Naidu, William Dodd

D P M—J F Cooper, Harry Fleming, Gerald Garmany, Margaret J Garmany, J H Gould, Samuel Leviten, Patrick Morris, John Slorach, and P C C Tresise

D.L O—J A. Harpman, C M Johnston, Ernest Kaplan, E C Richardson, and Ernst Rosenbaum

University of Aberdeen

On July 9, the following degrees and diplomas were conferred:

M.D—A H Cruickshank (*in absentia*) with highest honours, and D A Hunter, with commendation

M.B, Ch B—A L C Stalker (with first-class honours), John Mowatt (with second-class honours), Alexander Adam, Mary R Alexander, R. M Allan, Edwin Anderson, R M L Anderson, H I C Bowie Inez M Brebner D D Brown, I M Brown, A P Buchan, I J Buchan, Mary S Buchan, Neil Budge, James Cantlie, T L Carr, J R W Catto, Isabel M. S Chalmers, I G L Craig, J L T Dickie Margaret S Duguid, D M Dunbar, Lorna L Duncan, Eileen M Duthie, G W Forbes, Helen S Fraser, Leslie W. Fraser, W G French, Robert Gibb, Isobel R Grattidge, John Gray, A M Gwynn, Muriel O Henderson, G L Herbert, Eilean A Hunter, J G Hunter, T O'N F. Kelly, Margaret C Kemp W Y Laidlaw, Agnes K Leslie, J C Lightbody, R K MacCuish, J C M MacDonald, W H McGillivray, W B McGowan, Dorothy J Mackay, J M McKay, A A. Mackie, A H McLaren, Mary E C Maclean, Muriel M McLean Alexander Mair, V D R Martin, Elza H. Meadows D G Milne, J G Murray, Cecilia M Park G M. Reid, Alma O Ritchie, Mary B Robb, A. F Ross, G I M Ross, K A. D Ross, I L Roy, L S Rusack J K Russell, A G Scott, G M Sinclair, Emily S Smith, E B Smith, J A E Stewart A. B Strachan, Cecilia V Urquhart, Andrew Walker, S J. M Walker, W A Walker, William Watt, Dorothy M A White, G A Wilson, and J H Wood.

D.P.H—Mary Anderson, C T Baynes, Enid M Clow, and Vera D Davidson

University of Bristol

At recent examinations the following were successful.

FINAL EXAMINATION FOR M B, CH.B

G H Valentine and G H Wattley (with second class honours), Nancy R. Baldwin, R F Brooks, Rosalie M Child, D G Davies, John Deighton, G F M Hall, Joyce Kennard A G H Mitchinson, E W Moore J L Pardoe A R Rowe, Norman Slade, M. H Thomas, Jean Wallace and G A Walton

In Group II (*completing the examination*)—K L Brown and A H M Oakes

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[1] The Social Function of Science, London 1939

[2] The Furtherance of Medical Research, New Haven Yale University Press, London Humphrey Milford, Oxford University Press Pp 129 12s

[3] The Scientific Life London George Allen and Unwin Pp 154 7s 6d

University of Liverpool

At recent examinations the following were successful

M D—A B Higginson and C K Sconce

FINAL EXAMINATION FOR M B, CH B

Part III—Anita M Beck, S Bradshaw, E R Carter, V L Cooper, H V Cross, Jean M Frazer, G W Gibbs, Patricia F M B Gould, T C Highton, M Horwich, R D Hotston, H P Hughes, W B E Jones, J Littler, R B McConnell, Jane C S Maclachlan, L Mandel, A J Marsden, R H Maudsley P D Moss, J C V Murphy, S P C, O'Reagain, G J Rees, Hilda M Reeve, G C Roberts, C D Rosenwald, D I Rowlands, T L Schofield Betty W. Steiner, R V Tracy Forster Amabel M Turner, D C Watson, H H Watts, W D Wilson Rosalind Zalin

Part I—Ethel J Higgitt, Margaret Slater and Elspeth M Whittaker

Medical Casualties

The following casualties have lately been announced

Death on Active Service—Acting Brigadier Francis Gerald Augustus Smyth, CBE, MB Lond, late RAMC

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Prisoners of War—Major D C Bowie, FRCSE, RAMC, Major E J Curran, MB NUI, RAMC, WS/Captain R L Lancaster, MB Camb, RAMC, Major H G G Robertson, MRCS RAMC, Captain J E C Robinson, MRCS, RAMC, and Major J E Sawyer, MRCS, RAMC

Country Branch for the London Hospital

A self contained hutted hospital which has been built in the grounds of an LCC children's hospital in Essex will be staffed and run by the London Hospital, some of the 360 beds being reserved for EMS cases In three years over 51,000 beds have been built by the Ministry of Health under the Emergency Hospital Scheme

Medical Society for the Study of Venereal Diseases

The annual general meeting of this society will be held at 11, Chandos Street, London, W 1, on Saturday, July 25, at 2 P M At 2 30 P M Mr Aleck Bourne will read a paper on the diagnosis and treatment of non-gonococcal vaginal discharges

Socialist Medical Association

At a meeting on Wednesday, July 22, at 7 30 P M, at the Conway Hall, Red Lion Square, London, W C 1, Mr B C J G Knight, D Sc, will speak on the sulphonamides some history and theory

Maternity and Child Welfare Group

About eighty doctors attended the third refresher course held by this group of the society of MOHs which took place at Gt Ormond Street Hospital on July 4, when Dr Donald Paterson spoke on premature babies and feeding difficulties, and Mr Denis Browne on orthopaedics with special reference to minor degrees of deformity

In his paper on disorders in infancy, Dr Wilfrid Sheldon laid stress on the conditions found by medical officers in their work at the welfare centre sessions, and Dr W G Wyllie's lecture on the work of an asthma clinic was followed by a demonstration of skin tests, radiograms and breathing exercises

Personnel for Tuberculosis Institutions

On June 22 a deputation on the shortage of nursing and domestic personnel in tuberculosis institutions was received at the Ministry of Health by Sir Wilson Jameson, chief medical officer, Mr J C Wrigley, deputy secretary, Sir Weldon Dalrymple Champneys, deputy CMO, and Miss K Watt, chief nursing officer

The deputation, which consisted of Dr D A Powell, Dr D P Sutherland, and Dr J B McDougall (Joint Tuberculosis Council), Dr G T Hebert and Dr H G Trayer (Tuberculosis Association), Captain G S Elliston, M P (Society of MOHs), Sir Percival Horton Smith Hartley, Dr R A Young, Dr F R G Heaf and Dr Harley Williams (NAPT), considered the shortage to be due to fear of infection and lack of glamour in nursing tuberculous patients in comparison with service casualties It was urged that the Minister of Health should release himself from the pledge given to the Civil Nursing Reserve that its members should not be required to work in sanatoria unless they volunteered specially, and that a uniform scale of salaries should be set up

Stretchers for Merchant Ships

The joint advisory committee on the health of the cantile Marine has recommended that at least two Robertson stretchers shall be carried in all foreign g merchant ships A description of this stretcher appeare our columns last year (*Lancet*, 1941, i, 289)

Queen's Institute of District Nursing

During 1941 Queen's nurses and village nurse midw attended 87,906 confinements with 136 (or 1 6 per 1 maternal deaths There are now 1543 Queen's nurses 2752 nurse midwives

Royal Society of Tropical Medicine and Hygiene

The annual general meeting will be held at 26, Portl Place, London, W 1, on Thursday, July 23, at 4 30 Afterwards Sir Rickard Christophers, FRS, will read a p on the treatment of malaria

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FIRST AID posts and mobile units are being issued hydrogen peroxide (20 vols) for the treatment of Lew burns and with dredgers containing sulphanilamide pov for dusting on wounds when there is likely to be delay getting a casualty to hospital In future morphia will kept at the posts in 1 oz or ½ oz bottles containing g morphine sulphate per c cm

Mr W S GORDON, Ph D, has been appointed directo the field station of the Agricultural Research Council Compton, near Newbury, Berks, in succession to the Mr G W Dunkin Dr Gordon has been senior bacteriolo on the staff of the Animal Diseases Research Associatio Moredun Institute, Gilmerton, Midlothian, since 1930

The fact that goods made of raw materials in s supply owing to war conditions are advertised in paper should not be taken as an indication that they necessarily available for export

Appointments

TURNER, C E H, MRCS, DPH deputy medical superintenden the City Mental Hospital, Leicester
SMITH, D MORRISON, MB EDIN temp clinical TO for West Nor
PARMITER, B R, MB LOND examining factory surgeon Wimborne, Dorset

Births, Marriages and Deaths

BIRTHS

BUTLER—On July 4, at Farnham, Surrey, the wife of Dr Ken A. Butler—a daughter
CLYNE—On July 2, at Edinburgh, the wife of Dr Dougla Wilson Clyne—a daughter
COOKSON—On July 7, at Bournemouth, the wife of Dr Ha Cookson—a son
CRADDOCK—On July 8, at Woking, the wife of Surgeon Lieute J G Craddock, RNVR—a son
GOLD—On July 6, at Stansted, Essex, the wife of Lieute Stephen Gold, RAMC—a daughter
FALK—On July 6, at Warminster, the wife of Captain John RAMC—a son
GRAY—On July 6, in London, the wife of Major Charles RAMC—a son
TOLHURST—On July 9, at Cheam, Surrey, the wife of Sur Lieutenant D A Tolhurst, RNVR—a son
TURQUET—On July 11, the wife of Captain Pierre Turquet, RA a son.

MARRIAGES

ADAMSON—THORPE—On July 7, at Rye, James W W Adam MD, to Marjorie E W Thorpe
FARQUHAR—MARTIN—On July 6, at Kidderminster John B Farquhar, MB, captain RAMC, to Elizabeth Thomson Martin, MB
HOBBS—DANNATT—On July 4, at West Norwood, Frank E Ho MRCS, to Peggy H Dannatt, SRN

DEATHS

BATTEN—On July 9, George Beckett Batten MD EDIN, DMRE, of Dulwich, aged 81
CAMPBELL—On July 12, at Bath, Basil Patrick Campbell CAMB, FRCSE
PATERSON—On July 7, in London, Thomas George Ferg Paterson, CB, DSO, MB DUBL, Major General IMS, retd, la Aldeburgh, Suffolk, aged 65
POWER—On June 27, at Ashby de la Zouche, Edward Th Power, MRCS, of Atherstone, aged 87
TRESIDDER—On May 1, at Antibes, France, Percy Edgar Tresi MRCS, formerly of Nottingham, aged 68
WORTHINGTON—On July 8, at Llandrindod Wells, George Worthington, MB CAMB

FIBRIN SUTURE OF HUMAN NERVES

H J SEDDON
D M OXFD, F R C S
NUFFIELD PROFESSOR OF ORTHOPÆDIC SURGERY IN THE UNIVERSITY OF OXFORD

P B MEDAWAR
M A OXFD
FELLOW OF MAGDALEN COLLEGE, OXFORD

(*Illustrations on Plate*)

IMPROVEMENTS in the material used for nerve suture are of two kinds—a suture material may be discovered of such a composition that it offers little or no obstruction to regeneration, or, on the other hand, it may differ little in this respect from standard suture materials but be advantageous because of ease of application The first gain is biological, the second technical

Since the war of 1914–18 it has come to be fairly clearly understood that certain suture materials are less irritating than others and the irritation produced is proportional to absorbability, a fact first clearly demonstrated by Sargent and Greenfield (1919) There are three fine materials of fair tensile strength and low absorbability—linen and silk thread, and human hair (L Guttmann)—all of which have proved satisfactory A noteworthy advance was the realisation that the suture material should be passed only through the sheath of the nerve for when suture is performed in this way the cellular reaction around the stitches is very nearly extraneural, so much so that unless highly irritating material such as chromicised catgut is used the success of suture (considered only in relation to the operation of bringing the nerve stumps together) depends in the main on the skilful employment of any thread that can be relied on to bring the nerve sheaths together with accuracy It seems, therefore, that further improvements in nerve suture can be only technical, that is to say, simplification of operative manipulation

It will be recalled that when Young and Medawar (1940) introduced a coagulable plasma for the suture of peripheral nerves they were concerned entirely with the repair of small nerves in experimental animals, nerves so small that suture of the sheath was impossible, any stitches used had of necessity to traverse the substance of the nerve It is clear then that the absence of intraneural disturbance after fibrin suture in experimental animals is not of comparable significance in man since the intraneural reaction following through-and-through suture of the small nerves of rabbits does not occur after the perineural suture of human surgery The success of fibrin suture was also dependent on its application to lesions that were in the main recent, there was not the loss of substance which is so constant a feature of the secondary sutures that form the bulk of peripheral nerve repairs performed in man Lastly, the plasma was easy to apply because they always worked in a small field from which the plasma did not tend to drain away

APPLICATION IN HUMAN CASES

Fresh injuries—It has been our misfortune to deal with only four cases of recent division of a human nerve, and in only one of them were conditions suitable for the employment of fibrin suture

On Oct 19, 1940, a man was admitted with a deep and dirty laceration at the wrist which had divided all the flexor tendons, ulnar and median nerves, and both arteries Operation was performed six hours after the injury and apart from being exceedingly tedious was uneventful It was necessary to suture the ulnar nerve with silk because it was divided at an inconvenient point just proximal to the pisiform, where a suitable pool for reception of the plasma could not be improvised (we learned more later about how to fashion such pools) When all the tendons had been sutured the ends of the median nerve were approximated, this could be done with great accuracy because only the smallest quantity of nerve substance required removal Flexion of the wrist and lifting up of the skin edges produced a little pool at the bottom of which lay the median nerve with its cut surfaces in perfect apposition Plasma was dropped into the pit and held the nerve most securely When viewed through the transparent jelly the line of division was almost invisible The wound was closed in the usual way, and the wrist fixed by plaster in 30° flexion It is hardly necessary to record the after treatment in detail Recovery is occurring well in both median and ulnar nerves, and the photograph (fig 1) shows that on the sensory side there is no significant difference in the rate of recovery in the two areas This is what one would expect

The ease with which fibrin suture was performed in this case leads us to believe that the method is ideal for repair of recent nerve injuries—provided that wide resection of the stumps does not have to be performed

Secondary sutures—Apart from two cases of recent partial division, and those in which grafting was necessary (see below), the remainder of our patients with divided nerves required secondary suture The characteristics of the stumps presented for suture after resection has been performed are as follows

There is always a considerable gap, and, although the various measures now available for the mobilisation of nerve trunks make possible the closure of quite large gaps (15 cm in the main trunk of the sciatic nerve, 12 cm in the median, 12 cm in the ulnar and 8 cm in the radial), it cannot be denied that at the final approximation a certain amount of tension is often present, and plasma will not hold nerve ends together under more than the very slightest tension Furthermore the approximation of resected stumps has often to be performed in unnatural positions, the stumps may come together over the surface of a muscle belly—the ulnar nerve, for example, may lie on the surface of the common flexor origin at the elbow—and in a few cases we have had to suture nerves in mid-air, in particular the peroneal or tibial near the knee, and the reposition of the skin flap over the aerial cable has been a most ticklish affair In such cases where mechanical difficulties are great plasma is of no value

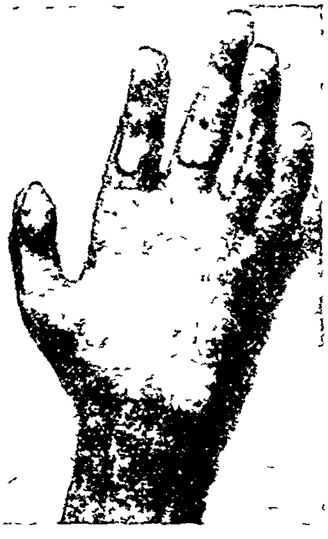

FIG 1—Sensory recovery eleven months after primary suture of median nerve (fibrin) and ulnar nerve (silk) In view of the fact that the ulnar nerve was divided 1 cm distal to the median the difference between ulnar and median sensory recovery is negligible Complete line = touch Dots = pain Dark staining = sweating

Another important feature of the resected stumps is the difference in diameter of central and peripheral cut surfaces, a difference that is roughly proportionate to the time that has elapsed between the injury and the suture Sometimes the diameter of the peripheral stump may be only two-thirds that of the proximal It has been said that this disparity can be compensated to some extent by oblique section of the peripheral stump so as to present an oval surface on the peripheral side having its long diameter equal to the diameter of the circular surface on the central In our experience this has never been possible So it is at once evident that the best hope of obtaining the least unsatisfactory regeneration lies in bringing the proximal and peripheral sheaths together and so preventing the sprouts from the central bundles shooting out laterally and missing the peripheral stump altogether In every case where this disparity in size of the stumps is considerable, reasonably good closure of the sheath can be brought about only by the most careful stitching together of the central and peripheral sheaths, and plasma by itself is of no use

The third characteristic of the stumps at secondary suture concerns the retractility of the nerve sheaths Whenever a peripheral nerve is divided the sheath retracts so that the bundles stick out like those in an electric power cable In some old-standing nerve lesions coming to secondary suture this retraction of the sheath is very striking and sufficient to increase the technical

University of Liverpool

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The annual general meeting of this society will be held at 11, Chandos Street, London, W 1, on Saturday, July 25, at 2 P M At 2 30 P M Mr Aleck Bourne will read a paper on the diagnosis and treatment of non gonococcal vaginal discharges

Socialist Medical Association

At a meeting on Wednesday, July 22, at 7 30 P M , at the Conway Hall, Red Lion Square, London, W C 1, Mr B C J G Knight, D Sc , will speak on the sulphonamides some history and theory

Maternity and Child Welfare Group

About eighty doctors attended the third refresher course held by this group of the society of MOHs which took place at Gt Ormond Street Hospital on July 4, when Dr Donald Paterson spoke on premature babies and feeding difficulties, and Mr Denis Browne on orthopædics with special reference to minor degrees of deformity

In his paper on disorders in infancy, Dr Wilfrid Sheldon laid stress on the conditions found by medical officers in their work at the welfare centre sessions, and Dr W G Wyllie's lecture on the work of an asthma clinic was followed by a demonstration of skin tests, radiograms and breathing exercises

Personnel for Tuberculosis Institutions

On June 22 a deputation on the shortage of nursing and domestic personnel in tuberculosis institutions was received at the Ministry of Health by Sir Wilson Jameson, chief medical officer, Mr J C Wrigley, deputy secretary, Sir Weldon Dalrymple Champneys, deputy CMO, and Miss K Watt, chief nursing officer

The deputation, which consisted of Dr D A Powell, Dr D P Sutherland, and Dr J B McDougall (Joint Tuberculosis Council), Dr G T Hebert and Dr H G Trayer (Tuberculosis Association), Captain G S Elliston, M P (Society of MOHs), Sir Percival Horton Smith Hartley, Dr R A Young, Dr F R G Heaf and Dr Harley Williams (NAPT), considered the shortage to be due to fear of infection and lack of glamour in nursing tuberculous patients in comparison with service casualties It was urged that the Minister of Health should release himself from the pledge given to the Civil Nursing Reserve that its members should not be required to work in sanatoria unless they volunteered specially, and that a uniform scale of salaries should be set up

Stretchers for Merchant Ships

The joint advisory committee on the health of the Me cantile Marine has recommended that at least two N Robertson stretchers shall be carried in all foreign merchant ships A description of this stretcher appeared our columns last year (*Lancet*, 1941, i, 289).

Queen's Institute of District Nursing

During 1941 Queen's nurses and village nurse midwi attended 87,906 confinements with 136 (or 1 6 per 10 maternal deaths There are now 1543 Queen's nurses a 2752 nurse midwives

Royal Society of Tropical Medicine and Hygiene

The annual general meeting will be held at 26, Portla Place, London, W 1, on Thursday, July 23, at 4 30 P Afterwards Sir Rickard Christophers, FRS, will read a pa on the treatment of malaria

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First aid posts and mobile units are being issued w hydrogen peroxide (20 vols) for the treatment of Lewis burns and with dredgers containing sulphanilamide pow for dusting on wounds when there is likely to be delay getting a casualty to hospital In future morphia will kept at the posts in 1 oz or ½ oz bottles containing gr morphine sulphate per c cm

Mr W S Gordon, Ph D , has been appointed director the field station of the Agricultural Research Council Compton, near Newbury, Berks , in succession to the l Mr. G W Dunkin Dr Gordon has been senior bacteriolog on the staff of the Animal Diseases Research Association Moredun Institute, Gilmerton, Midlothian, since 1930

The fact that goods made of raw materials in sh supply owing to war conditions are advertised in t paper should not be taken as an indication that they necessarily available for export.

Appointments

Turner, C E H , MRCS, DPH deputy medical superintendent the City Mental Hospital, Leicester

Smith, D Morrison, MB Edin temp clinical TO for West Norfo

Parmiter, B R , MB Lond examining factory surgeon Wimborne, Dorset

Births, Marriages and Deaths

BIRTHS

Butler —On July 4, at Farnham, Surrey, the wife of Dr Kenn A Butler—a daughter

Clyne —On July 2, at Edinburgh, the wife of Dr Douglas Wilson Clyne—a daughter

Cookson —On July 7, at Bournemouth, the wife of Dr Har Cookson—a son

Craddock —On July 8, at Woking, the wife of Surgeon Lieuten J G Craddock, RNVR—a son

Gold —On July 6, at Stansted, Essex, the wife of Lieuten Stephen Gold, RAMC—a daughter

Falk —On July 6, at Warminster, the wife of Captain John F RAMC—a son

Gray —On July 6, in London, the wife of Major Charles G RAMC—a son

Tolhurst —On July 9, at Cheam, Surrey, the wife of Surg Lieutenant D A Tolhurst, RNVR—a son

Turquet —On July 11, the wife of Captain Pierre Turquet, RAM a son.

MARRIAGES

Adamson—Thorpe —On July 7, at Rye, James W W Adam MD, to Marjorie E W Thorpe

Farquhar—Martin —On July 6, at Kidderminster, John B Farquhar, MB, captain RAMC, to Elizabeth Thomson Martin, MB

Hobbs—Dannatt —On July 4, at West Norwood, Frank E Ho MRCS, to Peggy H Dannatt, SRN

DEATHS

Batten —On July 9, George Beckett Batten, MD EDIN , DMRE, of Dulwich, aged 81

Campbell —On July 12, at Bath, Basil Patrick Campbell, CAMB , FRCSE

Paterson —On July 7, in London, Thomas George Fergu Paterson, CB DSO, MB DUBL , Major General IMS, retd, lat Aldeburgh, Suffolk, aged 65

Power —On June 27, at Ashby de la Zouche, Edward Tho Power, MRCS, of Atherstone, aged 87

Tresidder —On May 1, at Antibes, France, Percy Edgar Tresid MRCS , formerly of Nottingham, aged 68

Worthington —On July 8, at Llandrindod Wells, George V Worthington, MB CAMB

PULMONARY TUBERCULOSIS IN SERVICEMEN ANALYSIS OF 300 CASES

J H CRAWFORD, M.D LEEDS
ASSISTANT MEDICAL DIRECTOR OF A SANATORIUM

(*Illustrations on Plate*)

THE following analysis of 300 consecutive cases of ulmonary tuberculosis among servicemen admitted to ospital in the past few months may serve to indicate the alue or otherwise of the methods at present used by he recruiting medical boards in recognising such cases at he time of enlistment

The age-groups of the 300 cases investigated were

	Cases		Cases
Under 19	20 (6 6%)	30–39	64 (21 3%)
20–29	202 (67 3%)	Over 40	14 (4 8%)

Forty-two (14%) were cases of pleural effusion in which there was no demonstrable pulmonary lesion, though in 12 of these tubercle bacilli were ultimately found in the luid The remaining 258 (86%) were cases with definite parenchymatous lesions, and subdividing this latter group according to the Ministry of Health classification of TB minus and TB plus (groups 1, 2 and 3), there were

	Cases		Cases
TB minus	40	TB plus, group 2	166
TB plus, group 1	33	„ group 3	19

Not all the TB minus group could be regarded as early or minimal cases, and using the American classification of minimal, moderately advanced and far advanced lesions the grouping was

1 *Minimal lesion*—i e, slight infiltration without demonstrable cavitation, involving a small part of one or both lungs Total volume of lung involved, regardless of distribution, shall not exceed the volume of lung tissue which lies above the 2nd chondrosternal junction and the spine of the 4th or body of the 5th thoracic vertebra on one side 64
2 *Moderately advanced lesion*—i e, one or both lungs involved, total involvement not exceeding the following limits · (*a*) *slight* disseminated infiltration or fibrosis extending through not more than the equivalent of the volume of one lung, (*b*) *severe* infiltration, with or without fibrosis, extending through not more than the equivalent of one third the volume of one lung, (*c*) any gradation within the above limits, (*d*) total diameter of cavities, if present, should not exceed 4 cm 170
3 *Far advanced lesion*—i e, a lesion more extensive than under moderately advanced, or with definite evidence of greater cavity formation 24

Thus, of the parenchymatous lesions, only 24% had minimal disease, 66% had moderately advanced disease and 10% had advanced disease Table I correlates the age-groups with the type of lesion and stage of disease

TYPE OF LESION AND STAGE OF DISEASE AT DIFFERENT AGES

Age (yr)	Lesion				Total
	Effusion only	Parenchymatous disease			
		Minimal	Moderate	Advanced	
Under 19	4	7	7	2	20
20–29	37	27	126	12	202
30–39	1	25	30	8	64
Over 40	0	5	7	2	14
Total	42	64	170	24	300

A significant history, as detailed below, was given by 48 (16%) of the men In only 4 cases, however, was a further opinion sought by the recruiting board, and even then no X-ray examination of the chest was done

Previous stay in sanatorium	8*
Family history of tuberculosis	10
History of pleurisy	9†
History of winter cough or bronchitis	15‡
History of hæmoptysis	6

* Not disclosed in 4 cases, other 4 were regarded by the board as quiescent or arrested after further details had been given by the tuberculosis officers acquainted with the cases

† Including 1 case with family history of tuberculosis

‡ Including 2 cases with family history of tuberculosis and 1 with history of pleurisy

MODE OF ONSET

In more than 70% of the cases the mode of onset was insidious, and a classification of the primary symptoms shows the following incidence.

	Per cent		Per cent
Cough	39	Pleurisy	5
Pleural effusion *	23	Gastro intestinal symp	4
Lassitude	12	Shortness of breath	3
Hæmoptysis	10	Persistent laryngitis	3

* Effusion alone, 14%, effusion with underlying parenchymatous disease, 9%

In the remaining 1% the lesion was discovered at a special examination for service abroad

The majority of cases were sent by the battalion medical officer for further investigation without undue delay, and on the whole medical officers appear to be fully alive to the early symptoms of tuberculosis, though sporadic cases are still met where men have been retained on duty without an X-ray examination of the chest despite the persistence of suggestive symptoms

DURATION OF SERVICE

Analysing the duration of service before the onset of definite symptoms (table II) it is seen that nearly three-quarters of the men had less than a year's service, and in 8% of the cases the diagnosis was made within 3 months of enlistment

TABLE II—DURATION OF SERVICE

Group	1	2	3	4	5
Duration of service	Less than 1 month	1–3 months	3–6 months	6–12 months	Over 1 year
No of cases	4	20	38	152	86

Further analysis showed that, in group 1, one patient was a case of pleural effusion and had a bad family history of tuberculosis, the remaining 3 men had advanced lesions, one of them giving a history of hæmoptysis 5 months previously

In group 2 there were 3 cases of pleural effusion, one man having a family history of tuberculosis and the other 2 having both had previous attacks of dry pleurisy Of the 17 cases with parenchymatous lesions, 2 had a family history of tuberculosis, 3 had a suggestive previous history and 1 had previously been in a sanatorium

TABLE III—CORRELATION BETWEEN TYPE OF LESION, DURATION OF SERVICE AND SUGGESTIVE FACTORS IN MAN'S HISTORY

Duration of service in months	Cases with pleural effusion					With parenchymatous disease				
	Family history of TB	Previous san treatment	Significant personal history	Clear family and personal history	Total	Family history of TB	Previous san treatment	Significant personal history	Clear family and personal history	Total
Less than 1	1				1			1	2	3
1–3	1		2		3	2	1	3	11	17
3–6	1			9	10	2	4	16	6	28
6–12	1			15	16	1		3	132	136
Over 12			1	11	12	1	3	6	64	74

In group 3 there were 10 with pleural effusion, one of these men having a positive family history, and 28 with parenchymatous lesions, 2 having a family history of tuberculosis, 16 a suggestive previous history and 4 giving a history of previous sanatorium treatment

In group 4 there were 16 cases of pleural effusion, one with a family history of tuberculosis, and 136 with parenchymatous disease, one with a family history of tuberculosis and three with a suggestive previous history

In group 5 there were 12 cases of pleural effusion, only one of whom had any significant factor (a history of dry pleurisy some years before, and this was on the opposite side), and 74 with parenchymatous lesions, of whom difficulties of suture. Fortunately when stitches are inserted the sheaths often come back, moving over the bundles like a sleeve, but nothing of the kind happens when plasma is used, with the result that the bundles may be held together in the most irregular fashion. This state of affairs might, perhaps, be remedied by further resection of the bundles, but it is in just such cases that the greatest economy in resection often has to be observed.

This recital of difficulties might lead the reader to suppose that plasma is completely useless in secondary suture, but nevertheless there are many cases in which disparity in size, loss of substance, and retraction of the sheaths are not serious hindrances to the use of plasma. However, it must be emphasised that even if the surgeon knows that he is going to perform resection and suture of a nerve he can never be certain until the operation is well advanced that the case will be suitable for fibrin suture. If the following conditions are present then fibrin suture may be performed.

(*a*) Little or no tension at the suture line; moderate tension may be overcome by anchoring the stumps to the bed of the nerve by lateral sutures as shown in fig II.

(*b*) No great disparity in size of the resected surfaces. Moderate degrees of disparity in size (and of tension, too) may be remedied by the approximation of the nerve sheaths by two, three or four sutures (fig III). If after the insertion of a few sutures it is evident that there is little tendency for the proximal bundles to escape at the suture line plasma may well be employed to complete the operation.

(*c*) The nerve ends should lie in a situation where plasma can collect and form a small pond, since at the time of application the protein solution is fluid. The formation of a suitable pool is often assisted by tilting the operating table; by hooking up muscles or the margins of the wound with the small skin hooks used by plastic surgeons; and, lastly, little troughs may be made of bone wax like the clay troughs used by plumbers when pouring molten lead into a socket.

(*d*) A good reason for employing plasma is inaccessibility of the stumps. This is well illustrated by the case shown in fig II, where there was a division confined to the deep branch of the ulnar nerve. Suture by stitching could have been performed but the difficulties were great and it was much easier to anchor the stumps by single sutures at points slightly remote from the suture line, lay the cut surfaces in contact, and seal them together with plasma.

Grafts.—The mechanical conditions obtaining in nerve grafting (so far we have not used any grafts of large diameter) closely resemble those of animal experimental work and it is, therefore, not surprising to find that this is where fibrin suture is seen at its best. Fresh nerve grafts are notoriously difficult to handle (they are soft and slippery) and still more difficult to suture. On one occasion no plasma was available and we were compelled to use stitches instead, which made one appreciate all the more the great ease with which grafts may be held securely in position when plasma is used. There is no difficulty about tension, for the grafts should, if anything, be cut too long since it is known that they tend to shrink and shorten during the first weeks after operation. It is not usually difficult to lay them in good position, and if a sufficient number of grafts is available they make good contact with the whole of the cut surfaces of both central and peripheral stumps. It would, nevertheless, be an advantage to stick the grafts together with plasma before placing them between the stumps, and at the next opportunity we propose to lay the grafts in a small wax or metal trough of about the same dimensions as the gap to be repaired; pouring in plasma, and after it has coagulated removing the grafts "in aspic", and trimming the ends so that a smooth cut surface of bundles is presented to both central and peripheral stumps. If this is feasible then the final step is simple—a small quantity of plasma at each end will complete the sutures. Fig IV shows how anatomically perfect may be the repair in a case where an extensive lesion of C5 and C6 was replaced by cable grafts taken from the superficial radial nerve. One has no hesitation in saying that the introduction of fibrin suture has removed the greatest technical difficulty in nerve grafting, though it still remains to be seen whether repair by grafting of large defects in the major nerves is a worth-while procedure. At any rate this new technique has removed one of the major operative difficulties.

BEHAVIOUR OF THE FIBRIN COAGULUM IN MAN

As in so many other procedures connected with the repair of peripheral nerves, direct observation of the results of suture is rarely possible. However, in one case where a nerve graft was removed many months after its insertion (Seddon, Young and Holmes 1942) there was perfect union of both ends of the graft. But there the evidence ends. And when we have final records of the results in all cases in which fibrin suture has been employed it will still be impossible, unless (which is most unlikely) there are the most startling differences from the results of stitch-suture, to connect the final result with the nature of the suture material used. There is ample evidence that the perineural stitches of linen or silk offer little or no bar to regeneration; and even when stitches were passed through nerves Young and Medawar found that the fastest-growing pain fibres penetrated the peripheral stump as rapidly after stitching as after fibrin suture, though they were held up slightly longer in the suture-point scar itself. The merits of fibrin suture therefore lie essentially in the field of surgical technique and especially in the technique of nerve grafting.

The figures in the table, taken from the records of the peripheral nerve-injury centre at the Wingfield-Morris Orthopædic Hospital, Oxford, give some indication of the usefulness of fibrin suture.

SUMMARY OF OPERATION CASES

Nerve suture	Fibrin suture	Thread (silk or hair)	Fibrin and thread	Total
(*a*) Immediate repair	1	3		4
(*b*) Late repair	1	60	7	68
Grafts	6	1*		7
—	8	64	7	79

* No plasma available

SUPPLY

Although attempts to produce concentrated plasma on a commercial scale (in the form of a dried fibrinogen to be re-dissolved in human serum) have not yet been successful, there is no reason why local supplies should not be provided by a biochemical or pathological laboratory.

Experience accumulated during the course of preparing many samples of plasma showed that the description given by Young and Medawar (1940) may be modified in the following way. It is not necessary to wash the fibrinogen precipitate with distilled water provided that the supernatant fluid has been removed as completely as possible; but it is desirable to allow the fibrinogen precipitate to flocculate for twenty minutes instead of five.

Concentrated plasma keeps for about a week without deterioration, provided that it is stored in wax vessels, and the original plasma is known to be stable.

SUMMARY

A review is presented of the first series of peripheral nerve injuries in which fibrin suture has been given a trial at operation.

It is probable that plasma will prove of great value in primary suture of divided nerves.

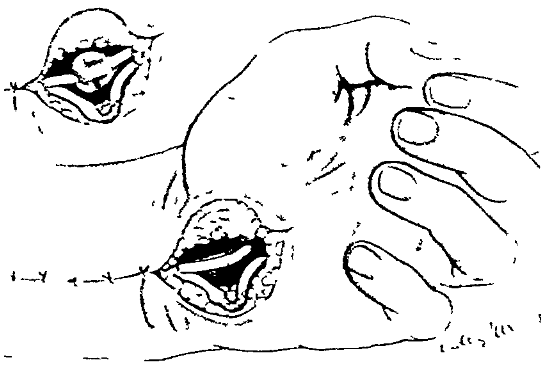
It is unlikely that plasma will come into general use for secondary repair since the conditions that favour its use are present in only a minority of cases.

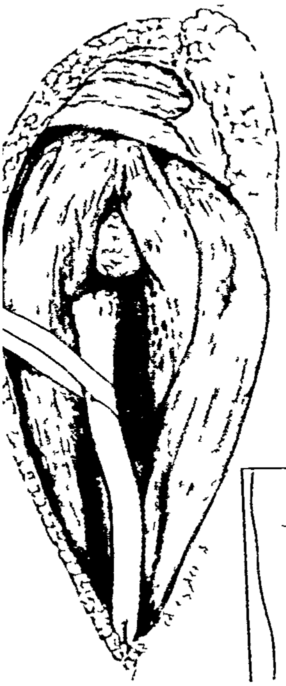
In the repair of large defects by grafting plasma is of great value and should be used in preference to all other suture materials.

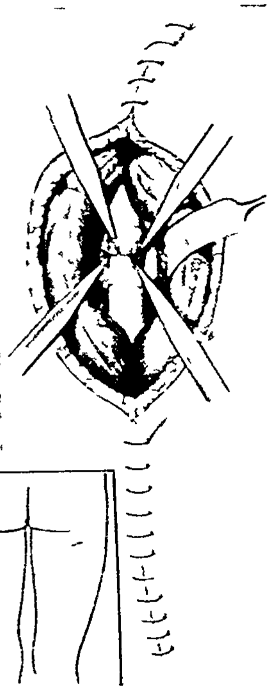
REFERENCES

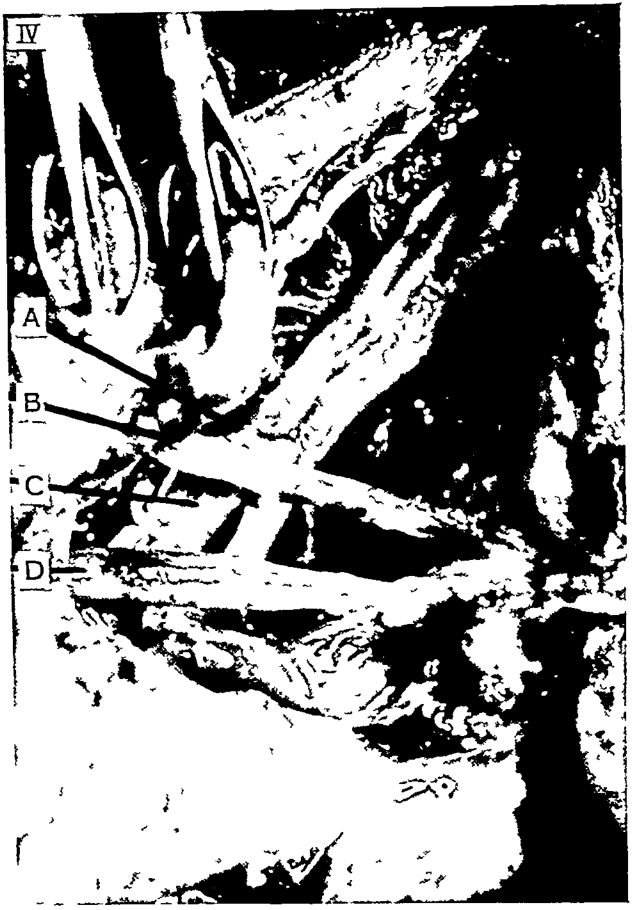
Sargent, P and Greenfield, J G (1919) *Brit med J* ii 407
Seddon, H J, Young, J Z and Holmes, W (1942) *Brit J Surg* 29, 378
Young, J Z and Medawar, P B (1940) *Lancet*, ii, 126

PROF SEDDON AND MR MEDAWAR · FIBRIN SUTURE OF HUMAN NERVES









A, lower junction of grafts, only two are visible.
B, transverse cervical vessels
C, branches of upper trunk.
D, posterior belly of omohyoid

MAJOR PROWSE PULMONARY HYPERÆMIA AND ŒDEMA

II

one had a positive family history, six had a suggestive previous history and three had previously undergone treatment in a sanatorium These findings are correlated in table III

Thus, of the 48 men with some significant factor in their personal or family history, 34, or 70%, broke down and had to be invalided from the Service within 6 months of enlistment *Alternatively, of the total of 62 men who* developed tuberculosis within 6 months of enlistment, 34, or more than 54%, had some suggestive factor in their previous history

AGE OF LESION

In every case an X-ray film of the chest was taken before the diagnosis was made, and each film was carefully scrutinised by at least two different members of the staff of the sanatorium with a view to determining if possible the duration of the lesion, and to answering the question whether radiological examination of these men at the time of enlistment would have revealed the presence of pulmonary disease The criteria adopted have been similar to those enumerated by Aspin and Stalker (1941)—duration of symptoms, extent and density of the lesions, evidence of traction and fibrosis, presence of cavitation and the clinical course of the disease The estimation of the radiological appearances of a lesion some time before the skiagram is actually taken is admittedly difficult, and in some cases in the present survey no accurate estimation could be made However, after all relevant factors had been taken into careful consideration, it was thought that in 201 cases—i e, 67% of this series—the lesion could have been detected by radiology at the time of enlistment The following case-histories, together with reproductions of the X-ray films, are typical examples of the cases in this group

CASE-HISTORIES

CASE 1 —Age 24, 8 months' service Rather subject to recurrent colds each winter, otherwise nothing relevant in personal history Mother alive but father died 5 years previously of "influenza and pneumonia" having had persistent cough and "bronchitis" for many years Patient developed a cough with greenish sputum within 3 weeks of enlistment Five months later had laryngitis and then developed difficulty in swallowing, but had no special treatment or investigation despite increasing lassitude and gradual loss of weight Ultimately had two fairly large hæmoptyses in quick succession and this focused belated attention on his chest On examination was found to have signs of extensive bilateral disease, with involvement of the larynx The sputum was heavily positive and X ray (fig I) showed extensive mottling over the whole of the right lung with cavitation throughout, and an area of heavy mottling over the mid zone of the left lung associated with calcified deposits at the hilum

CASE 2 —Aged 35, 6 months' service Father, one brother and 2 sisters had died within the preceding 4 years of phthisis, and the patient had had an attack of pleurisy on the right side 5 years ago Since then he had felt occasional pain and tightness in chest with slight cough each autumn and winter Shortly after entering Army cough had increased and become productive, and had noticed increasing shortness of breath for which he ultimately sought medical advice Sent here for investigation, and extensive clinical signs were found over right side of chest, and sputum was positive X ray (fig II) showed considerable fibrotic disease on right with well marked evidence of traction, shown by displacement and angulation of trachea and mediastinum, diminution in size of affected hemithorax, cramped intercostal spaces, increased obliquity of the ribs, flattening of diaphragm with adhesions over outer third, cicatrisation of upper zone of right lung, and infiltration over upper half of left lung

CASE 3 —Age 33, 7 months' service No family or personal history of tubercle Three months after enlistment felt below par and was easily tired, about a month later developed cough and sputum but did not report sick for another 3 months by which time had lost more than 2 stone in weight In examination, was very thin and wasted, and had obvious clinical signs of extensive bilateral disease Sputum heavily positive and X ray (fig III) showed very extensive fibro caseous disease on left side with cavitation at apex and large cavity in axillary region showing a well marked fluid level On right side extensive mottling with widespread confluent areas suggestive of a tuberculous bronchopneumonia, this element of the lesion clearly being of relatively recent origin

CASE 4 —Age 22 No family or personal history of tubercle, and says he was always well before enlistment Eighteen days after joining his unit had slight staining of sputum and a few days later complained of pain over left side of chest A week later was referred to hospital owing to persistence of symptoms, and X ray (fig IV) revealed well marked cavitation in right upper lobe with considerable pleural thickening over this zone, and diffuse infiltration over upper half of left lung which appears to be of recent origin with breaking down of lung tissue Had no sputum but a specimen of fæces was positive

CASE 5 —Age 30, 4 months' service No family or personal history of tubercle Lassitude, shortness of breath and laryngitis of two weeks' duration Sputum only scanty but positive on concentration, and X ray (fig V) showed extensive disease throughout left lung with considerable fibrosis especially over upper lobe, and several cavities in all zones (one below clavicle showing a fluid level), scattered mottling throughout right lung with thin walled cavity in mid zone

CASE 6 —Age 20, 3 weeks' service One brother developed tuberculosis during the preceding year and was at home for some months, occupying the same bedroom though he had a separate bed, before being admitted to a sanatorium Patient developed slight cough few weeks before examination by recruiting board, but neither X-ray examination nor further opinion was sought by the board After enlistment cough increased, sputum became purulent, and voice husky, five weeks later had small hæmoptysis and was sent to hospital Sputum heavily positive, and X ray (fig VI) revealed extensive disease of both lungs with large cavity in left upper lobe and definite fibrosis

COMMENT

Anxiety has been felt for some time by many workers in tuberculosis concerning the large number of men discharged from the Services with tuberculosis after having been passed as fit by the recruiting boards The above figures show that in this series more than two thirds of the servicemen who broke down with tuberculosis almost certainly had demonstrable disease before enlistment, and that the methods of examination at present used by the boards are inadequate as a means of detecting the symptomless case

The methods at present used are (1) ordinary clinical examination, (2) referring "suspicious" cases to hospital or the tuberculosis officer, (3) notification of known cases of tuberculosis to the board by the local tuberculosis officers, and (4) obtaining a statement from each man that he has not previously suffered from tuberculosis The first method is often hurried and cannot be regarded as a reliable means of detection except in cases with gross physical signs, while the last two methods

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Legends to Illustrations on Plate

PROFESSOR SEDDON, MR MEDAWAR

FIG II —Division of the motor branch of the ulnar nerve secondary suture After excision of the damaged part of the nerve the wrist was flexed, and the stumps anchored by lateral sutures placed about 1 cm away from the cut surface Good approximation was obtained and the union completed with plasma

FIG III —Complete division of the main sciatic trunk secondary suture There was little disparity in size between central and peripheral stumps and the case was an ideal one for fibrin suture after rough approximation of the sheaths with fine silk stitches The watch maker's forceps were used to pull the sheaths together before the plasma was poured on

FIG IV —Untouched photograph taken at operation There was a complete lesion of the outer two thirds of the upper trunk of the brachial plexus, but the consistency of the inner third was so nearly normal that it was spared, and it did in fact contain one or two apparently healthy bundles The excised part of the trunk was replaced by three auto grafts from the superficial radial nerve The upper junction of the grafts cannot be seen

MAJOR BARRINGTON PROWSE

FIG I —One hour after accident, showing homogeneous opacity of both upper lobes with enhanced translucency of lower zones (*Inadvertently reversed in reproduction*)

FIG II —Twenty four hours after accident Apical opacity much reduced, no evidence of emphysema in lower zones

can only affect a small minority of recruits. Concerning the second method, Gregory Kayne (1940), describing his experience of 134 cases referred to him as a tuberculosis officer by the boards, gives the reason for reference of each case and found that a history of "pleurisy" in the past and a family history of tuberculosis headed the list. Other important reasons were previous stay in a sanatorium or attendance at a tuberculosis clinic many years before. Despite this, only 2 cases of active phthisis and 1 case of a "quiescent" early lesion were found (though there were 8 other men with healed phthisis), and Kayne concluded that these criteria could not be relied on to detect more than a small fraction of recruits with either active or healed pulmonary lesions.

Graham and Davies (1941) found that 5·7% of 1869 men referred to them in Wales by medical boards were suffering from pulmonary tuberculosis. Here, the main criteria for reference were history of contact, a significant past or present history, and the presence of abnormal physical signs. But the number of cases missed by relying only on these methods cannot be accurately known, and Kayne (1941) estimated that in the Welsh series only 13% of the men who might reasonably be expected to have unsuspected pulmonary tuberculosis at the time of their initial examination were in fact diagnosed.

Legends to Illustrations on Plate

DR CRAWFORD

FIG I (Case 1).—Extensive mottling with cavitation throughout right lung, heavy mottling in mid-zone of left lung with calcified deposits at hilum, 8 months' service, had symptoms for practically the whole period.

FIG II (Case 2).—Extensive fibrotic disease in right lung, infiltration of upper half of left lung, 6 months' service, bad family history.

FIG III (Case 3).—Extensive disease of both lungs with widespread consolidation on right side and multiple cavities on left side, 7 months' service.

FIG IV (Case 4).—Cavitation in the right upper zone with fibrotic disease, diffuse infiltration upper half of left lung, less than one month's service.

FIG V (Case 5).—Scattered mottling throughout right lung with thin-walled cavity in mid zone, extensive disease and considerable fibrosis in left lung with several cavities, 4 months' service.

FIG VI (Case 6).—Very extensive disease throughout both lungs with large cavity in left upper lobe, only 3 weeks' service, bad family history, had definite symptoms before enlistment.

DRS KEMP, MURRAY, WILSON

FIG I.—Lateral radiogram of a boy of 15 (case 4) showing irregular ossification of the epiphyseal nuclei and the end plates of the lower dorsal vertebræ (D7 and D11). Slight wedge formation of the vertebræ, slight dorsal kyphosis. (Bampton, Oxfordshire.)

FIG II.—Normal spine in a girl of 18 (nursing candidate) showing regular ossification of the end plates of the vertebral bodies. Small epiphyseal nuclei still remaining near the anterior angles.

FIG III.—Dorsal spine in a woman of 21 (nursing candidate). Dorsal kyphosis, wedge formation of the body of D8. Wavy outlines of the anterior ends of the bodies of D7 and D9. Osteophytic outgrowths from D7, D8 and D9.

FIG IV.—Lateral radiogram of the lower dorsal vertebræ and lumbar spine in a boy of 14 (case 14). Very deep nuclear expansions into the bodies of the vertebræ indicated by bowing of the end plates. Irregular ossification of the contour and edges of the end plates of the lower dorsal vertebræ and of the epiphyseal nuclei. Forward projection of the upper anterior angle of the body of L2. (Launton, Oxfordshire.)

FIG V.—Lateral radiogram of a boy of 13$\frac{11}{12}$ (case 23). Very deep nuclear expansions into the bodies of the lower dorsal vertebræ. Relatively normal lumbar vertebræ. Irregular ossification of the epiphyseal nuclei of the anterior ends of the end plates of the lower dorsal vertebræ with slight wedge formation. (Maldon, Essex.)

FIG VI.—Lateral radiogram of a boy of 14 (case 18). Shallow nuclear expansions in the bodies of the lower lumbar vertebræ. Regular ossification of the end plates, epiphyseal nuclei not visible. (Oxford city.)

Nevertheless, though the reasons for reference as given above may be inadequate to detect more than a small number of cases of phthisis, their importance should not be overlooked; and since in the present series one of the most significant facts revealed is that not one recruit had been X rayed, and only 4 had been referred to a tuberculosis officer, it appears that many boards are still not referring a sufficient number of doubtful cases for a second opinion and full investigation.

Most tuberculosis workers hold the view that all recruits should be subjected to a radiological examination as the only sure way of preventing the entry of tuberculous individuals into the Services. Heaf and Rusby (1940) have summarised the advantages of mass radiography in the examination of recruits, as follows. First, from every 2 million men recruited approximately 20,000 tuberculous or potentially tuberculous subjects could be excluded, the saving to the state in the cost of treatment and pensions can be readily appreciated if not accurately estimated. Secondly, documentary evidence of fitness or freedom from tuberculosis at the time of enlistment would be obtained. Thirdly, early examples of non-tuberculous pulmonary disease would be recognised at a stage when treatment could offer a greater chance of radical cure.

Galbraith (1941), on the basis of routine X-ray examination of more than 100,000 recruits in the Australian Army by miniature radiography, found that 1·04% showed evidence of tuberculous lesions not of the primary type, and in 0·56% the condition was active. All these recruits had passed the clinical medical examination. Similar surveys have been made in many countries, and the volume of evidence which has now accumulated shows that in unselected samples of the apparently healthy adolescent and young adult population the incidence of definite pulmonary tuberculosis of the adult type is between 0·5% and 1%. Seeing that nearly every case with such pulmonary lesions will give an abnormal X-ray picture it is clear that radiology is the only practical method of detecting these symptomless cases. In 1940, the Horder Committee considered the question of mass radiography in the examination of recruits, and while agreeing that miniature radiography was the ideal to be aimed at they felt that serious practical difficulties were involved, and the adoption of this method was therefore not recommended.

Lately the Horder Committee has reported again (Cmd 6353),[1] and states that the use of mass radiography is being developed by the Services for the examination of personnel as apparatus becomes available. While commending this step the committee still feels that the adoption of mass miniature radiography as part of the examination by medical boards is impracticable, and states further that the magnitude of the problem, contrary to its estimate in the mind of a section of the public, is very small. This conclusion is apparently based on the fact that a selected group of men revealed a very low incidence of pulmonary tuberculosis. But the findings recorded in this paper, taken in conjunction with the conclusions arrived at by other investigations, show that the problem cannot be minimised in any way, and will have to be considered energetically if tuberculous individuals are to be prevented from entering the Services.

CONCLUSIONS

An investigation of 300 consecutive cases of pulmonary tuberculosis admitted from the Services emphasises the need for more detailed examination of men prior to enlistment.

Two-thirds of the cases which were ultimately diagnosed as tuberculous could, in our opinion, have been detected at the initial medical examination had radiological methods been included as a routine procedure.

Only 48, or 16%, of the cases had a suggestive personal or family history, and, though the criteria for further investigation usually adopted by medical boards are important, they are in themselves unreliable as a means of detection of all but a small proportion of the total number suffering from pulmonary tuberculosis.

Though no attempt has been made to go into the financial implications of the problem as revealed by this

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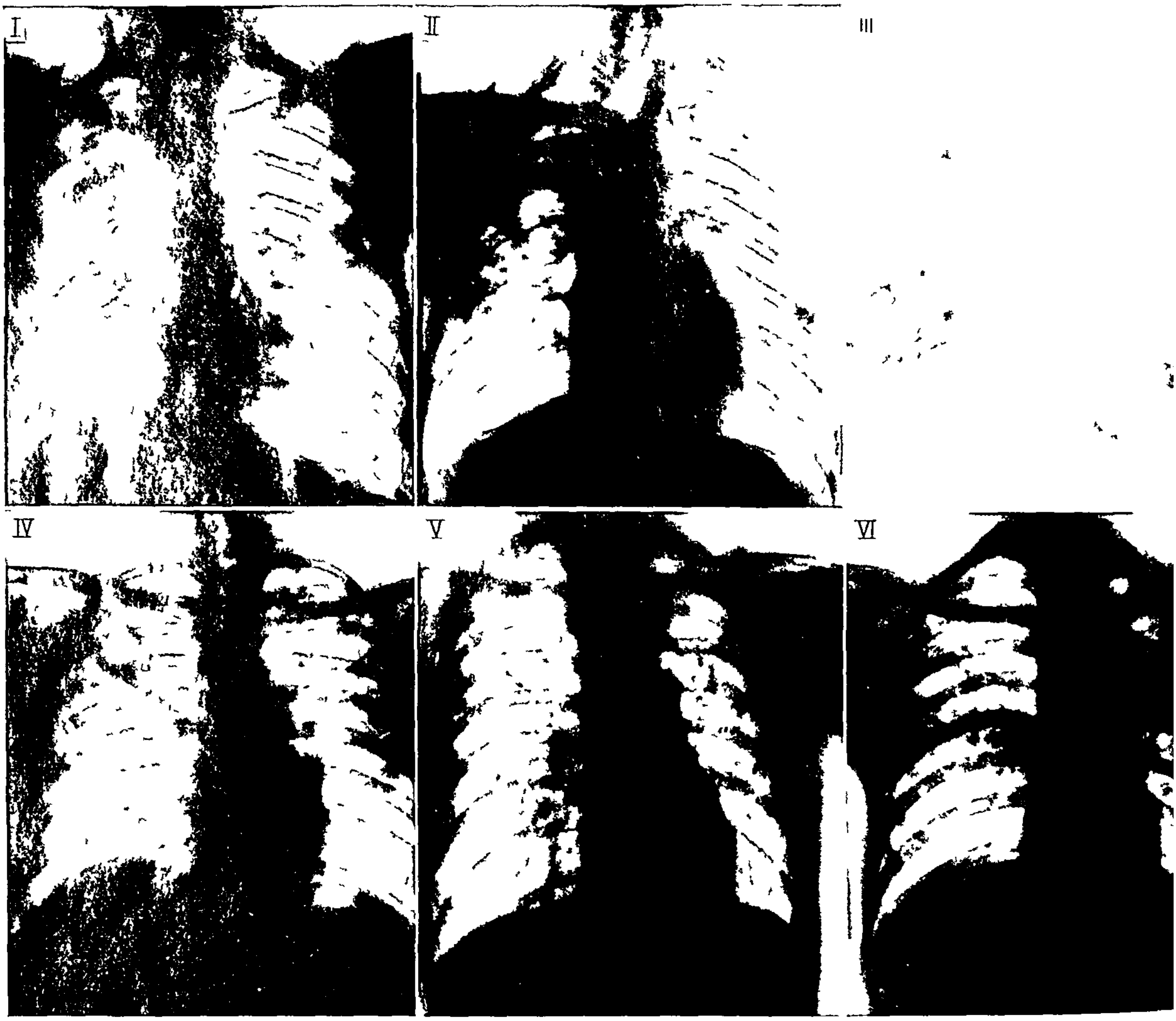
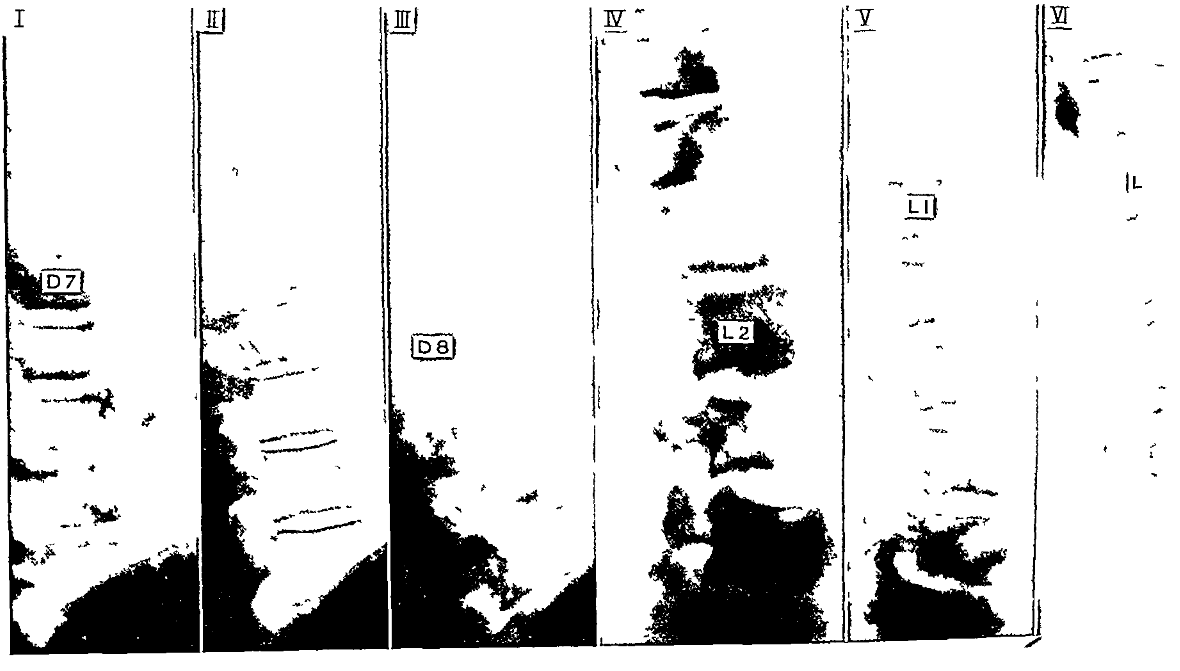
[1] See *Lancet*, 1942, i, 568.

DR CRAWFORD PULMONARY TUBERCULOSIS IN SERVICEMEN



DR KEMP, MISS MURRAY AND DR WILSON SPONDYLOSIS IN RELATION TO FLUOR



SPONDYLOSIS DEFORMANS IN RELATION TO FLUORINE AND GENERAL NUTRITION

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(Illustrations on Plate)

The radiological investigations to be described originated in the observation of the frequency of ‘ round back ” among children and adults in areas where mottled enamel was prevalent

The significance of fluorine as a trace element in human nutrition has received little attention except from those interested in tooth formation and dental caries Until recently it was considered that the lower limit at which fluorine in drinking water would give rise to mottled enamel was 1 part per million, but Sognnaes (1941) and Sognnaes and Armstrong (1941) have suggested that in Tristan da Cunha, where the fluorine in water is 0 2 p p m , there exists a ‘condition of “ threshold mottling,” evidenced by the white spots of a very mild degree of dental fluorosis It is concentrations of fluorine between these mentioned levels that are of interest in the observations to be described

As far as we can ascertain neither in America (Hodges et al 1941) nor in this country have skeletal changes been reported as associated with mottled enamel in human beings The bone changes of chronic industrial fluorine poisoning in man were observed for the first time by Flemming Møller and Gudjonsson (1936) in cryolite workers Cryolite—a double fluoride of sodium and aluminium containing as much as 54% of fluorine—is mined in Greenland and later refined for use in the manufacture of aluminium near Copenhagen Roholm (1937) reported on these workers and showed fluorine was the toxic factor responsible for the bone changes Clinically many of the workers were in poor health, and some showed signs of silicosis , the commonest complaints were various dyspeptic phenomena, shortness of breath and rheumatic attacks In rather more than half the workers there was restricted mobility of the spine and in severe cases almost complete rigidity Radiography shows a progressive osteosclerosis of all the bones, especially of the vertebræ, the pelvis and the ribs Changes may be detected after about two years' exposure At first the osseous pattern seems whiter and more blurred than normal , later both the cortical bone and the cancellous trabeculations become thicker until ultimately the osseous pattern may seem to be completely effaced and the bones appear marble white and structureless The bony contours are almost everywhere irregular and the attachments of the muscles become thickened and ossified so that the bones seem covered with excrescences There is considerable ligamentous ossification, especially about the intervertebral and costovertebral articulations In the limbs there may be ossification of all the principal tendinous insertions and of the interosseous membranes

In England, Wilkie (1940) has reported 2 cases of chronic industrial fluorosis in men working in a Sheffield factory producing aluminium fluoride and hydrofluoric acid The bone changes were identical with those described by Flemming Møller and his colleagues According to Hunter (1939) no changes have been reported in workers dealing with fluorspar, enamel glazing or glass

Findings in Adults

The present investigation was undertaken to determine whether any changes could be detected radiologically in the bones of persons with dental fluorosis in Oxfordshire Mottled enamel is quite common among the villagers, but relatively rare in Oxford city where cases are mostly confined to suburbs which used to derive their water-supply from local wells The first persons radiographed were adults from the village of Bampton They had been resident in the village since childhood and derived their water-supply from surface wells, with fluorine contents varying from 0 3 to 0 9 p p m The findings are summarised in table I

Case 1 —Man, aged 53 Edentulous, but son had severe dental fluorosis Complained of rheumatism Considerable dorsal kyphosis with restricted spinal movements, posture resembling picture of cryolite workers in Roholm's book Rounded dorsal kyphosis due to wedge formation of lower dorsal vertebral bodies (D7–D11) , calcified envelopes of Schmorl's nodes visible , marginal lipping of affected vertebræ and narrowing of disc spaces Slight lumbar lordosis , no other abnormality Pelvis normal

Case 2 —Man, aged 18, son of previous patient No complaints Severe dental fluorosis with pitting of enamel No obvious skeletal deformity Slight wedge formation of body of D8 and irregularities of end plates of many other vertebræ, both dorsal and lumbar Pelvis normal

Case 3 —Woman, aged 38, no complaints Edentulous, but son who used same water had moderate dental fluorosis No spinal deformity, and movements seemed normal Regular ossification of end plates , marginal lipping of all dorsal vertebræ, especially lower , anterior ends of disc spaces narrowed

The radiological appearances of these cases were attributed to degenerative lesions of the intervertebral discs, and since there was no evidence of osteosclerosis they were dismissed as negative for signs of chronic fluorine intoxication. In view of these findings, which were supported by the experience gained in routine radiological examinations in the departments of the Radcliffe Infirmary and the Wingfield-Morris Orthopædic Hospital, where many patients are radiographed for spinal deformities and chronic rheumatism every year, it was thought that no further investigations among adults were worth while, for if the typical skeletal changes of chronic fluorine intoxication occur in Oxfordshire they must be very uncommon It must be admitted that the fluorine intake of the three cases under investigation was not high

Findings in Children

We decided to examine a group of children to see whether any disturbances of natural growth could be determined, since we argued that a minimal toxic factor would be most liable to produce changes during the most active phases of bone growth, and in those situations most subject to stresses and strains The spine was selected for examination because, towards puberty, growth is centred in relatively thin layers of tissue in the end plates of the bodies of the vertebræ which are subjected to considerable changes of pressure with every movement The children were rated clinically and examined for deficiency disease as described elsewhere (Wilson 1941b)

BAMPTON, OXFORDSHIRE

The first group includes 4 children of a Bampton family The father is an agricultural labourer and for many years contributed little money to maintain his family Judged from his economic standard his elder children were ill-nourished for many years In the last 3 years the economic conditions of the family have bettered and there has been a corresponding improvement in general health The family derived their water from a surface well containing at different times 0 3–1 2 p p m of fluorine All the children show severe dental fluorosis with pitting of the teeth

Case 4 —Boy, aged 15 Severe dental fluorosis Stocky build Head carried forwards Slight dorsal kyphosis and lumbar lordosis Anterior bowing of cervical spine but no structural malformations , upper 6 dorsal vertebræ relatively normal, showing regular ossification of end plates and epiphyseal nuclei , lower dorsal vertebræ showed flattening of bodies and slight wedge formation of D7 and D8 , irregular ossification of end plates and epiphyseal nuclei (fig I) Anterior third of bodies showed very irregular ossification, anterior epiphyseal nuclei being larger than normal, irregularly sclerosed and fragmented, and compressed into vertebral bodies which themselves showed irregular reactionary sclerosis L1 showed similar changes, L2 and L3 less definite changes , L4 and L5 relatively normal Intervertebral disc spaces narrowed in lower dorsal region , small nuclear expansions analysis, it is clear that the admission of such men to the Services is wasteful and uneconomic, and the cost to the country is out of all proportion to the value of these men as members of the fighting services They have to be equipped and trained and cost the country a considerable sum of money for short and unsatisfactory periods of service They constitute a danger to other troops who are necessarily thrown in close proximity to them under camp or barrack conditions Valuable hospital time and accommodation is taken up by these men before the diagnosis is established and their discharge arranged Further, there is the financial burden to the state represented by the cost of pensions for a number and the treatment for all

Finally, since radiological investigation is the only reliable procedure for the detection of clinically unsuspected cases of pulmonary tuberculosis, it is hoped that the Horder Committee will now reconsider the problem in the light of these and other recent findings Manufacturers of apparatus would, we believe, willingly cooperate with teams of tuberculosis physicians and radiologists in any endeavour to set up centres for the detection of tuberculous cases by the use of mass methods and we are convinced that the results would amply repay the expenditure involved

I am indebted to Dr J B McDougall, medical director, for permission to carry out this analysis and for his guidance and criticisms

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ACUTE PULMONARY HYPERÆMIA AND ŒDEMA OF UPPER LOBES

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TEMPORARY MAJOR, R A M C

(*Illustrations on Plate*)

The following case presented an unusual clinical picture and demonstrates the important part played by mechanical factors, particularly gravity, in the production of hyperæmia of the lungs

A leading aircraftsman crashed in an aeroplane when landing The plane buried its nose in the ground and he was pinned in the cockpit upside down, standing on his head and bent forwards over a gun, which drove into his chest causing a depressed fracture of the manubrium He also sustained a crush fracture of the anterior part of the body of the fourth thoracic vertebra After the crash he remained in this position for about half an hour before he could be released

When seen about an hour after the accident, he was pale, slightly cyanosed, and had a fast pulse of poor tension He complained of pain in the upper part of his chest made worse by movement and any but the shallowest breathing His respiration rate was raised and breathing was interrupted from time to time by little short coughs, which produced pink stained frothy sputum The chest was held in the inspiratory position and some bulging of the chest wall was noticeable in its lower part There was a little subcutaneous swelling and bruising of the central part of the chest wall at the level of the manubrium , this extended to just beyond the sternoclavicular joints on each side and up into the root of the neck around the lower end of the left sternomastoid muscle There was no surgical emphysema The head was poked forward and a sharp hump was noticeable in the upper part of the back , the second and third thoracic spines formed the most prominent part of this and the fourth was tender on pressure Movement of the chest was restricted, more so at the apices, particularly the right Vocal fremitus was reduced, though everywhere present , but, whereas the percussion note was hyper resonant at the bases and in the axillæ, at the apices it was relatively impaired, down to the level of the third space on the left and the fourth on the right The breath sounds were faint at the apices and obscured by bubbling râles and crepitations , elsewhere they were without accompaniments, and loud and harsh in spite of the limited respiratory excursion The area of cardiac dullness was diminished , the apex beat was not palpable, but the heart sounds were best heard in the fifth space just to the left of the sternum , they were normal and there were no added sounds

The physical signs suggested acute œdema of the upper lobes, more severe on the right side, with compensatory emphysema at the bases, more pronounced on the left and causing displacement of the heart to the right This was confirmed by X ray examination (fig i), which showed homogeneous opacity of both upper zones, extending slightly lower on the right side, and a high degree of translucency in the lower zones There was no sharp line of demarcation between opaque and translucent areas, but a gradual merging of the one into the other

The man had been somewhat shocked on admission, but rest, warmth and morphia improved his general condition He was placed on his back with the shoulders slightly raised , in this position, although there was still pain with breathing, the acute respiratory distress was soon much relieved In view of the possible danger of pulmonary infection, particularly since he said he had had a cold for the past twenty four hours, he was immediately put on full doses of sulphapyridine as a prophylactic measure

Next day, although pain in the upper part of the chest was severe, he had no respiratory distress Breath sounds were now quite good at the apices and a few medium rales were the only accompaniments All evidence of compensatory emphysema had disappeared X ray (fig ii) showed considerable clearing of the apical opacity, no evidence of emphysema in the lower zones and the heart shadow restored to its normal position

Subsequent progress of the pulmonary condition was uneventful save for the development, ten days after admission, of physical signs of partial collapse at both bases This was not accompanied by any untoward symptoms, and although the pulse rate remained between 80 and 90 per min his temperature and respirations were normal after the fourth day It did however delay treatment of the spinal deformity, but four weeks after the accident this was reduced under an anæsthetic and a plaster of paris jacket was applied A radiogram taken three weeks after the accident showed no abnormality in the lungs

DISCUSSION

Hyperæmia of the lungs is usually described as being either active or passive, according as it arises from an *increased supply of blood to the lungs or* is the result of an impeded venous return from them In the present case both factors were probably at work, which would account for the very acute onset of symptoms , obstruction to the venous return, however, was almost certainly the more important of the two

Active hyperæmia is associated with an active and healthy heart action, whereas passive hyperæmia is usually encountered with a diseased and weakened heart In the present case the heart muscle was good and the lungs were therefore richly supplied with blood, probably at an increased pressure, because of the inverted position, but the venous return was impeded, partly from the same cause and partly as a result of pressure at the site of injury, exerted principally on the relatively thin walled pulmonary veins at their entry into the left atrium Mechanical factors therefore were the most important on this occasion and gravity not the least of these, which should provide an effective reply to the sceptics who would have us believe that this force plays *no part in the production* of basal pulmonary " congestion "

When first seen, this patient presented many of the clinical features which have been described in connexion with blast injury to the lungs—notably shock, dyspnœa, cyanosis, pain in the chest, hæmoptysis, chest held in the inspiratory position, bulging of the chest wall, poor respiratory excursion and weak breath sounds with crepitations and bubbling rales If a victim of a bomb explosion received the injuries detailed in this case and was thrown into a similar position of inversion either condition might be present, and it would be important to be able to decide whether he was suffering from blast injury to his lungs or from the less serious condition here described Features suggesting blast injury would be the disproportionate degree of shock by comparison with the external evidence of injury, the greater restlessness, the even distribution throughout both lung fields of physical signs found only in the upper zones in this case, and the absence of compensatory emphysema

OXFORD CITY

Four Oxford city children were examined They were relatively poor but their general nutrition was considerably better than that of the poor Bampton and Launton children They had no signs of dental fluorosis and their drinking water contained no fluorine

CASE 18 —Boy, aged 14 Poor posture Irregular ossification of end plates with small Schmorl's nodes in dorsal region and slight nuclear expansions in lumbar region (fig VI), no wedge shaped deformities, no epiphyseal nuclei visible

CASE 19 —Boy, aged 13 Fair posture Regular ossification of end plates except for tiny irregularities suggesting small Schmorl's nodes, epiphyseal nuclei visible as thin regular plates, no wedge shaped deformities

CASE 20 —Boy, aged 13 Tall, fair posture Radiography showed no deformities, ossification regular, epiphyseal nuclei visible as thin regular plates

CASE 21 —Boy, aged 13 Tall, slight build, fair posture Radiography showed regular ossification and no deformities, epiphyseal nuclei not visible

In two of these children (cases 18 and 19) there were slight changes similar to those described in three of the Launton children (cases 15, 16 and 17)

The findings in these small groups of cases showed that disturbances in the natural ossification of the vertebral bodies are fairly common among children There was no definite evidence that fluorine was responsible, but, since in two cases (cases 4 and 5) severe changes were associated with severe dental fluorosis, it was thought possible that fluorine might have influenced the abnormal bone development This suggestion seemed to be supported when a number of other cases showing similar structural changes in the spine were found to be associated with dental fluorosis Accordingly it was decided to make a further examination of a group of children from Maldon in Essex, where the fluorine content of the water-supply reaches 5 p p m (Bowes and Murray 1936)—a level considerably higher than that in Bampton or Launton

MALDON, ESSEX

This group comprises 6 children Their general nutrition was comparable with the Oxford city children; all had severe dental fluorosis

CASE 22 —Boy, aged $13\frac{11}{12}$ Slight dorsal kyphosis and lumbar lordosis Slight wedge shaped deformities of many dorsal vertebræ, end plates regular, deep nuclear expansions in lower dorsal and whole lumbar spine, epiphyseal nuclei not visible

CASE 23 —Boy, aged $13\frac{11}{12}$ ' Dorsal spine straight, lumbar lordosis No definite deformities of ossification in upper dorsal vertebræ D11 and D12 showed wedge shaped formation of anterior halves of bodies and irregular ossification of anterior limits of end plates, only the epiphyseal nuclei of these vertebræ were present, anteriorly they were fragmented and compressed into the vertebral bodies L1 and L2 showed milder changes D11, D12 and all lumbar vertebræ showed deep nuclear expansions (fig V)

CASE 24 —Boy, aged $13\frac{11}{12}$ Slight lordosis Very deep nuclear expansions in lower dorsal and all lumbar vertebræ, no other structural deformities, epiphyseal nuclei visible in dorsal region

CASE 25 —Boy, aged $13\frac{3}{12}$ Slight kyphosis and lordosis Slight irregularities of end plates of dorsal vertebræ, slight wedge formation of D8, lower dorsal and all the lumbar vertebræ showed deep nuclear expansions, no epiphyseal nuclei visible

CASE 26 —Boy, aged $13\frac{4}{12}$ No definite clinical deformity Appreciable wedge formation of many dorsal vertebræ and slight irregularities of ossification of end plates, many deep nuclear expansions in lower dorsal and lumbar regions but not all these vertebræ were affected, epiphyseal nuclei not seen

CASE 27 —Boy, aged $14\frac{1}{2}$ Lordosis, no dorsal curvature Slight wedge formation of many dorsal vertebræ, end plates fairly regular apart from one or two small Schmorl s nodes, epiphyseal nuclei visible in dorsal region, lumbar spine showed nuclear expansions but not so deep as in other cases

All 6 Maldon cases showed definite structural changes In case 23, two of the vertebræ showed changes similar to those of case 4, but in the others the changes were not so severe Many cases showed appreciable wedge-formation but clinically lordosis was much commoner than kyphosis Deep-nuclear expansions in the lumbar region were seen in 5, and were more definite than those observed in the Oxfordshire cases other than case 14

Subsequent Course of Spinal Changes

It will probably be difficult to follow up all these cases to see what happens in later life In 2 instances (the twins, cases 6 and 7) the changes seemed to show spontaneous improvement within 12 months, probably related to improved general nutrition or to change of postural habits In other instances similar structural deformities have been known to improve, but many persist Some idea of the frequency of these deformities may be gathered from the records of a number of young adults male and female All appeared healthy and none had symptoms referable to the spine The radiograms available for examination were lateral views of the chest showing part of the dorsal spine, and were taken in the course of a chest survey among medical students and nurses The findings are shown in table II

Discussion

Endemic dental fluorosis occurs in many parts of the world but cases of chronic fluorine intoxication with skeletal changes seem to be comparatively rare Shortt

TABLE II—FINDINGS IN PART OF DORSAL SPINE VISIBLE IN ROUTINE CHEST RADIOGRAMS IN APPARENTLY HEALTHY YOUNG ADULTS

Medical Students

Age and sex	Dental fluorosis	Radiographic appearances	Age and sex	Dental fluorosis	Radiographic appearances
21 M	NE	Normal	21 M	NE	Normal
19 M	NE	Dorsal kyphosis wedged vertebræ	20 M	NE	Slight deformities of ant angles
21 F	NE	Normal	19 M	++	Dorsal kyphosis wedged vertebræ Schmorl s nodes
20 M	NE		20 M	NE	Normal
21 M	NE		21 M	NE	
22 M	NE				
22 F	NE				
21 F	NE				

Nursing Candidates

Age and sex	Dental fluorosis	Radiographic appearances	Age and sex	Dental fluorosis	Radiographic appearances
21	NE	Dorsal kyphosis, wedged vertebræ (fig III) marginal lipping	20	+	Normal
20	NE	Normal	22	Nil	Slight dorsal kyphosis narrowed disc spaces, marginal lipping
18	NE	Wedged vertebræ irregular end plates	21	Nil	Normal
19	NE	Dorsal kyphosis irregular end plates narrowed disc spaces	18	+	Slight dental kyphosis irreg end plates, narrow disc spaces
24	NE	Dorsal kyphosis narrow disc spaces marginal lipping	23	Nil	Wedged vertebræ Schmorl s nodes narrowed disc spaces
20	NE	Dorsal kyphosis wedged vertebræ	20	+	Wedged vertebræ, Schmorl s nodes narrowed disc spaces
18	NE	Irregular end plates large Schmorl s nodes	24	+	Irregular end plates Schmorl's nodes, narrowed disc spaces marginal lipping
18	NE	Dorsal kyphosis wedged vertebræ, marginal lipping	21	Nil	Irregular end plates Schmorl s nodes
20	+	Narrowed disc spaces marginal lipping	19	Nil	Normal
21	+	Dorsal kyphosis narrowed disc spaces	26	Nil	Dorsal kyphosis narrowed disc spaces
24	+	Marginal lipping many Schmorl s nodes	19	+	Normal
21	+	Dorsal kyphosis disc spaces narrowed anteriorly	20	+	
19	+	Normal	20	Nil	
18	+	Normal (fig II)	18	Nil	
37	Nil	Dorsal kyphosis marginal lipping	27	+	
18	Nil	Normal	22	+++	One wedged vertebra
34	+	Narrowed disc spaces marginal lipping	19	+	Dorsal kyphosis many wedged vertebræ irreg end plates narrowed disc spaces slight marginal lipping
22	NE	Narrowed disc spaces wedged vertebræ	20	Nil	Normal
22	Nil	Narrowed disc spaces marginal lipping	20	Nil	

NE = Not examined

into bodies of lower dorsal and lumbar vertebræ, shown by bowing and local sclerosis of end plates

CASE 5—Boy, aged 13, brother of previous case Severe dental fluorosis, nutrition subnormal Slight dorsal kyphosis and lordosis Radiographic appearances similar to case 4, but less well marked, most striking changes were in D12 and L1 Epiphyseal nuclei present but small Slight spondylolisthesis present with associated defect in neural arch of L5 A year later boy had left school and was earning satisfactory wages Nutrition good Forward projection of anterior angles of bodies of D12 and L1, with slight wedge formation, epiphyseal nuclei still small or absent Better calcification than in case 4

CASE 6—Girl, aged 11, sister of previous two cases Severe dental fluorosis, nutrition subnormal, no definite abnormalities Radiographic appearances similar to but less definite than in case 5 Changes greatest in lower dorsal and upper lumbar spine Epiphyseal nuclei of dorsal spine all present, relatively large and very dense in lower dorsal region Anterior angles of some of dorsal bodies compressed forwards, but no wedge shaped deformity A year later irregularities not so well marked, ossification of end plates improved, nuclear expansions visible in lower dorsal and lumbar regions Had grown slightly

CASE 7—Twin sister of preceding case Severe dental fluorosis, nutrition subnormal Definite dorsal kyphosis and lumbar lordosis Slight wedge formation of several dorsal vertebral bodies, other appearances similar to case 6 A year later only slight dorsal kyphosis present, dorsal spine straighter and deformity of vertebræ less, end plates regular, and only slight nuclear expansions, epiphyseal nuclei well formed but very dense

All 4 cases belonging to the same family showed radiological evidence of a disturbance of natural ossification involving dorsal and lumbar vertebræ, the lower dorsal and the upper lumbar bodies were most affected The changes were a disorganisation of ossification of the end plates of the affected vertebræ and the epiphyseal nuclei, with compression deformities of the vertebral bodies and narrowing of the intervertebral disc spaces The eldest child showed the most definite changes His brother, a year younger, was not so severely affected when examined originally, and at a second examination, a year later, the appearances were not much worse The twin girls showed fewer changes than the second brother, and a year later both showed definite improvement It is possible that their favourable progress was related to the improved financial circumstances of the family due to the inheritance of an uncle's savings

Two other families in Bampton were examined and similar appearances were shown

CASE 8—Girl, aged 15 Member of large poor family Severe dental fluorosis, nutrition subnormal Slight dorsal kyphosis, slight deformities of vertebral bodies, irregular ossification of end plates, small nuclear expansions in dorsal and lumbar regions, epiphyseal nuclei visible Appearances similar to cases 6 and 7

CASE 9—Girl, aged 11, sister of case 8 Severe dental fluorosis, nutrition subnormal No spinal deformity, irregular ossification of many end plates, well marked nuclear expansions in lumbar region, only few epiphyseal nuclei present

CASE 10—Girl, aged 9, younger sister in same family Severe dental fluorosis, nutrition subnormal, slight kyphosis Slight wedging of many vertebral bodies, slight irregularities of end plates, no definite nuclear expansions, epiphyseal nuclei not present

CASE 11—Girl, aged 10, only child Mild dental fluorosis, nutrition subnormal Slight kyphosis and slight wedge formation of several dorsal bodies, many upper dorsal bodies showed forward projection of anterior angles suggesting protrusion of intervertebral discs, irregularities of end plates, small nuclear expansions

The mother and maternal uncle of case 11 were examined

CASE 12—Mother of case 11, aged 37 Very mild dental fluorosis, occasional backache Slight dorsal kyphosis, restricted spinal movements, no wedge shaped vertebræ, regular end plates, no Schmorl's nodes, narrowing of anterior ends of many intervertebral discs of dorsal spine Forward protrusion of anterior angles of dorsal vertebræ, no true osteophytic lipping

CASE 13—Uncle of case 11, aged 38 Farm labourer Mild dental fluorosis, nutrition good Slight dorsal kyphosis, irregularity of end plates, few small Schmorl's nodes, slight osteophytic outgrowths Lumbar spine normal

TABLE I—FINDINGS IN TEETH AND SPINE IN 27 SUBJECTS

Case		Age and sex	Dental fluorosis	Spine irregular ossification	Nutrition
Bampton	1	53 M	Edent	Nil	
	2	18 M	+ + +	Nil	
	3	38 F	Edent	Nil	
	4	15 M	+ + +	+ + +	Poor
	5	18 M	+ + +	+ +	
	6	11 F	+ + +	+	
	7	11 F	+ + +	+ +	
	8	15 F	+ + +	+	Poor
	9	11 F	+ + +	+ +	
	10	9 F	+ + +	+	
	11	10 F	+	+	
	12	37 F	+	+	
	13	38 M	+	+ +	
Launton	14	14 M	+ +	+ + +	Good
	15	10 M	+ +	+	
	16	13 M	+ + +	+	Poor
	17	11 M	+ + +	+	
Oxford	18	14 M	Nil	+	Fair
	19	13 M	Nil	+	
	20	13 M	Nil	Nil	
	21	13 M	Nil	Nil	
Maldon	22	13½ M	+ + +	+	Fair
	23	13½ M	+ + +	+ +	
	24	13½ M	+ + +	+	
	25	13½ M	+ + +	+	
	26	13½ M	+ + +	+ +	
	27	14½ M	+ + +	+	

+ = mild, + + = moderate, + + + = severe

LAUNTON, OXFORDSHIRE

The next group comprises 4 children from the village of Launton where severe dental fluorosis is common The water-supply contains 0 8 p p m of fluorine The children of two schools—one elementary, one secondary—were interviewed In the elementary school there were many ill-nourished children showing poor posture, 4 were selected for examination, 2 apparently well nourished and 2 ill nourished

CASE 14—Boy, aged 14, tall and well built Moderate dental fluorosis Social conditions of home unsatisfactory Slight dorsal kyphosis, slight wedge formation of some dorsal bodies Ossification deep to end plates of vertebræ shown as irregular dense bands, much wider than normal, forming upper and lower borders of vertebral shadows, epiphyseal nuclei large and very dense but not displaced, very deep nuclear expansions in dorsal and lumbar regions, indicated by bowing of end plates with considerable reactionary sclerosis of bone, forward projection of upper anterior angle of L2, narrowing of intervertebral disc spaces in dorsal region (fig IV)

This case showed considerable disorganisation of the natural ossification of the end plates but no changes in the anterior thirds of the bodies as in case 4

CASE 15—Boy, aged 10, stocky and well built Moderate dental fluorosis Social conditions of home very good Slight wedging of one dorsal vertebra, slight irregularities of end plates, small epiphyseal nuclei

CASE 16—Boy, aged 13, short, thin and ill nourished Severe dental fluorosis Home conditions poor No wedge formation, slight irregularities of end plates, epiphyseal nuclei not ossified

CASE 17—Boy, aged 11, short, thin and ill nourished Severe dental fluorosis, no wedge formation, slight irregularities of end plates, small Schmorl's nodes in dorsal region, epiphyseal nuclei not ossified

One of these children (case 14) showed severe changes in the spine but the other 3 showed only slight departures from the normal Case 14 was a tall boy whose radiographic appearances were consistent with recent growth The other boys were relatively short and the epiphyseal nuclei were small or absent

CHRONIC DIARRHŒA
DUE TO *TRICHOCEPHALUS TRICHIURUS*

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On admission she was passing 4–6 semi liquid stools daily, and the pain and tenesmus continued The only abnormal finding was a palpable descending colon which was contracted and somewhat tender, especially in the left iliac fossa Her blood showed a hypochromic microcytic anæmia with a hæmoglobin level of 56%, red cells 3,540,000, white cells 7300 per c mm (eosinophils 13%) A fractional test meal showed complete achlorhydria, and her stool contained a few red cells and pus cells, and the distinctive barrel shaped ova of *Trichocephalus trichiurus* On these findings, apparent clinical trichocephaliasis was diagnosed Barium meal and enema examination had been made before admission, without showing any abnormality, to complete the investigation sigmoidoscopy was performed This confirmed the diagnosis in a remarkable manner, showing a little reddening and thickening of the mucosa of the lowest 9 in of the bowel, most conspicuous about 7 in from the anus where the mucous membrane was seen to be covered by a layer of sticky mucus, underlying which were several hæmorrhagic spots 1–2 mm in diameter, attached to some of these spots moving whipworms could be seen, and several were removed with forceps One specimen recovered in this way was found on microscopic examination to have a collar of bowel mucosa adhering to the junction of the thin anterior portion with the thick posterior portion (see figure)

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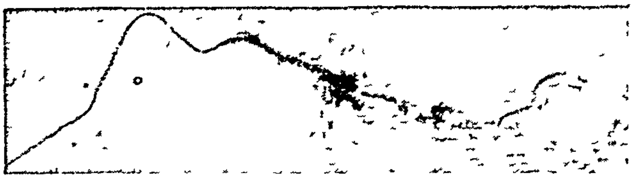

Male *T dispar* 2 8 cm long, the neck accounting for 2 1 cm of the length The body is in a spiral, and the terminal spicule, alimentary canal and testis can be distinguished Surrounding the junction of neck and body is a fragment of intestinal mucosa, in which the intestinal epithelial cells are recognisable when stained with toluidin blue (Report by Dr A H Cruickshank) ×7

DISCUSSION

Little information exists regarding the incidence of trichocephalus infestation in this country, which is not surprising considering how seldom it produces symptoms Still (1918) found the worm at autopsy in the cæcum of 8% of children, but he never saw more than three or four worms in a single case, and was never able to diagnose the condition during life He also records that there was invariably a coexisting infestation with threadworms Manson-Bahr (1938) has found the ova in the stools of children in Kent The incidence is probably much less now than it was at the time of Still's observations owing to improvements in sanitation in the past 20 years, in the north-east of Scotland it must be very low since, in Aberdeen, the ova have not been seen in the routine microscopic examination of stools, nor the worms observed in the intestine at autopsy, for the last 5 years

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Changes similar to those in Shortt's cases have been reported from South Africa by Ockerse (1941), who found 15 areas in the Pretoria district where mottled enamel is endemic. The fluorine content of the water in 10 of these varied from 1.43 p.p.m. to 13.9 p.p.m. Though he was able to report 8 cases among natives who drank water containing 11.98 p.p.m. of fluorine, his inquiries among doctors failed to reveal any other cases simulating chronic fluorosis. He suggests that there may well have been people with less obvious symptoms.

The development of the disease is influenced by several factors. Pundit and his colleagues (1940) found that bone changes in fluorosis bore a definite relationship to the economic and nutritional status of communities. In England, severe cases are unlikely to occur because social conditions are on the whole satisfactory. If fluorine causes any ill effects they are most likely to be found in childhood during the active phases of growth, when latent deficiencies or toxic factors are best revealed. Several workers have found that in mottled enamel good structure (i.e., absence of pitting) is associated with a good state of nutrition, and it has also been shown that the fluorine content of bones increases with age (Glock, et al. 1941), but so far no-one has investigated the effects of fluorine in the bones of growing children.

In this short series of cases we have found that disturbances in the natural ossification of the spines of children are very common. Though some of these defects probably heal or improve, we found many young adults with similar deformities and with early signs of spondylosis deformans (spondylitis osteo-arthritica). We notice that dental fluorosis is commonly associated with such changes but we have no evidence to prove that fluorine is solely responsible: changes of a similar nature, though less definite, were demonstrated in children showing no signs of dental fluorosis, and not all children with severe dental fluorosis had changes in the spine, whereas some with only slight mottling showed significant deformities.

These results are put forward as a preliminary investigation, since it will be necessary to study the growth of bone in groups of children of different ages over several years, taking into account nutrition, posture, rate of growth, habits and occupation. We believe that fluorine in the water-supply may influence the development of such defects especially when it is associated with defective nutrition.

The radiographic appearances of the cases here described are similar to those described by Scheurmann (1921) in cases of adolescent kyphosis, but none of our cases had symptoms. Scheurmann attributed the changes to disordered ossification of the epiphyseal centres of the vertebral end plates analogous to Perthes's disease of the femoral head; wedge-formation of the vertebræ resulted from compression of the bodies anteriorly, together with defective growth of the compressed bone. Later Schmorl (1929–30) suggested that the radiographic appearances could be attributed to herniations of the nucleus pulposus of the intervertebral discs into the bodies of the affected vertebræ, with the result that the vertebral bodies were subjected to increased strain anteriorly. The disorganisation of the epiphyseal nuclei and the wedged vertebræ were secondary to compression and defective growth of the compressed tissues. Radiographically, such hernias cannot always be discovered, because of the absence of reactive changes in the bone; for it is not the prolapse but the bony envelope around it which is visible in the film. Subsequently, Scheurmann (1936) recognised that changes may begin a few years before the appearance of the epiphyseal nuclei, but he did not modify his opinion that the condition was due to a disturbance of growth. He considered that the appearances were due primarily to irregularity of the formation of the "limbus vertebralis" with ultimate nuclear prolapse.

These different opinions have caused considerable controversy, and it is now generally agreed that, whereas Schmorl's view offers a satisfactory explanation in some instances, other cases are best described as a disturbance of growth associated with abnormal posture.

Children with adolescent kyphosis are not often seen in hospital practice, though the condition is far more common than is generally supposed. In typical cases there are characteristic deformities: the head is carried forward and the shoulders are rounded. There is a rigid rounded kyphosis of the dorsal region and a varying degree of lumbar lordosis. We have shown radiographically that similar malformations commonly occur in children and young adults without manifest deformities. These findings are in accord with clinical experience, for in Oxford, over 3 years, 74% of cases of dorsal kyphosis referred for radiographic examination were under 50 years of age. There was no clear distinction between adolescent and senile kyphosis. Many cases conforming to the description given by Beadle (1931) of senile kyphosis were seen in young adults of both sexes.

We believe that spondylosis deformans (spondylitis osteo-arthritica) may be the result of progressive degeneration, during life, in malformations acquired in youth. If this is so, such changes should be preventable if we can ensure the proper development of children.

In the schools of Oxfordshire it has been suggested that increased emphasis on posture during physical training would be useful early treatment of this spinal condition among children whose general nutrition is already benefiting from additional milk and school dinners.

SUMMARY

Though skeletal changes in association with dental fluorosis have been reported in India and South Africa no similar observations have been published in America or Britain.

A radiological investigation has been made of 27 people (5 adults and 22 children) to determine whether mottled enamel due to fluorine was associated with skeletal changes.

Findings suggest that disturbances of natural ossification are fairly common among children, but there was no definite evidence that fluorine was responsible, though in 2 cases severe skeletal changes were associated with severe dental fluorosis and 6 children from Maldon in Essex with severe mottled enamel all showed disturbance of ossification.

Signs of similar developmental disturbances and early spondylosis deformans were found among many young adults, in some of whom dental fluorosis was also noted.

These findings are in accord with clinical experience which suggests that spondylosis deformans is the result of the progressive degeneration of malformations laid down in youth. We conclude that fluorine in soil and water, in association with defective nutrition, may favour such maldevelopment.

We wish to thank the county medical officer of health for Essex and his staff for giving us opportunities to X ray Maldon children, and the Medical Research Council for a grant towards the expense of the investigation.

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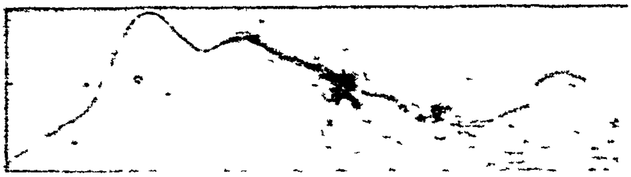

Male *T. trichiura* 3 cm. long, the neck accounting for 2·1 cm. of the length. The body is in a spiral [illegible] alimentary canal and testis can be [illegible]. Surrounding the junction of neck and body is a fragment of intestinal mucosa, in which the [illegible] (Photo by Dr A. H. Cruickshank.) [illegible]

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In the schools of Oxfordshire it has been suggested that increased emphasis on posture during physical training would be useful early treatment of this spinal condition among children whose general nutrition is already benefiting from additional milk and school dinners.

SUMMARY

Though skeletal changes in association with denta fluorosis have been reported in India and South Afric no similar observations have been published in America o Britain.

A radiological investigation has been made of 27 peopl (5 adults and 22 children) to determine whether mottle enamel due to fluorine was associated with skelet changes.

Findings suggest that disturbances of natural ossification are fairly common among children, but there was n definite evidence that fluorine was responsible, thoug in 2 cases severe skeletal changes were associated wit severe dental fluorosis and 6 children from Maldon i Essex with severe mottled enamel all showed disturbanc of ossification.

Signs of similar developmental disturbances and earl spondylosis deformans were found among many youn adults, in some of whom dental fluorosis was also noted.

These findings are in accord with clinical experienc which suggests that spondylosis deformans is the resul of the progressive degeneration of malformations lai down in youth. We conclude that fluorine in soil an water, in association with defective nutrition, may favou such maldevelopment.

We wish to thank the county medical officer of healt for Essex and his staff for giving us opportunities to X ra Maldon children, and the Medical Research Council for a gran towards the expense of the investigation.

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Continued at foot of next pag

THE LANCET

LONDON SATURDAY, JULY 25, 1942

DISCOVERING TUBERCLE

Overwhelming evidence is now available showing that radiological changes usually precede both physical signs and symptoms of tuberculosis Thus if early diagnosis is to be the rule rather than the exception, it follows that periodical routine chest radiography will have to be applied to susceptible groups of the population on a very large scale Convenience and cost make miniature screen photography the method of choice, provided a sufficient degree of accuracy is obtainable In a recent review of 20,000 screen miniatures in the RAF, Trail says[1] he obtained smooth and efficient working with 100 examinations per hour, modern American equipment was used, and in the miniature films which showed lung abnormalities the picture was almost always sharper than on the following large film He admits that the most he expected of the miniature film was to reveal abnormality requiring further investigation—clinical, pathological or radiological His review showed that of 20,000 young men who had made no complaint and who had passed the routine medical examination 54 (0 27%) had active and 67 (0 33%) inactive pulmonary tuberculosis In our present issue Crawford analyses 300 consecutive Service cases admitted to a sanatorium in recent months, a considerable majority of these cases presented obvious symptoms of active tuberculosis within a year of being passed fit for service and most of them were no longer " early " cases at the time of diagnosis In Crawford's opinion, based on history and radiological evidence, two thirds of these cases could have been diagnosed by radiological examination at the time of enlistment Although unamenable to scientific proof there seems no reason to doubt his conclusion that " though the criteria for further investigations usually adopted by medical boards are important, they are in themselves unreliable as a means of detection of all but a small proportion of the total number suffering from pulmonary tuberculosis " If then radiological investigation is the only reliable procedure for the detection of clinically unsuspected cases of pulmonary tuberculosis, he is surely justified in hoping that the Horder Committee will now reconsider the problem in the light of his own and other recent findings

We suspect the recent white paper (Cmd 6353, 1*d*) of undue optimism in its inference that as about one per cent of recruits are rejected on grounds of tuberculosis only one or two per thousand are left to be detected after recruitment by miniature radiography Available evidence makes it sadly unlikely that 10 out of 11 or 12 cases of pulmonary tuberculosis could possibly be detected by clinical methods alone While it would hardly be fair to ask for the number of men discharged from the forces on account of tuberculosis it would be useful to know how the percentage of cases of tubercle discovered in the British Army compares with that of the Canadian Forces in this country, the latter having been examined radiologically as well as clinically The Minister of Health in his review of the nation's health on June 30 remarked that we must review our approach to tuberculosis and give greater practical effect to the need for early diagnosis, he described miniature radiography as a new and useful weapon of which the fullest advantage should be taken, and it is encouraging to know that sets of apparatus are already on order from manufacturers in this country and in America Routine radiological examination of large groups of people has thus entered the sphere of practical politics, when it has been extensively applied we can confidently predict the detection of large numbers of symptomless and signless patients, and the first step in the weeding out of tuberculosis will have been taken. What we are to do with them when found is another matter Cases of active disease will mostly require institutional treatment, and we are short of sanatorium beds and nurses Other cases, including the inactive or doubtfully active lesions, will get well if relieved from industrial strain and freed from economic want That is a problem of social medicine in its purest form

MENTAL NURSING

At the instance of Lord Latham the Upper House has considered[1] in many of its aspects the exclusion of mental nurses from the purview of the Rushcliffe Committee and it would be well for all concerned to ponder the 20 columns of *Hansard* for July 8 recording the debate Equally worthy of close study is the story of a remarkable piece of quiet conciliation whose continuance coloured the claim to separate consideration In 1919, it may be recalled, conditions of service of nurses in mental hospitals were poor In some places the weekly hours of work amounted to as much as 70 and rates of pay had never been stabilised The nurses not unnaturally were dissatisfied and made their opinion known through the Asylum Workers Union which had been founded in 1910 In February 1919, largely thanks to Thomas Field, then chairman of the Bucks mental hospital visiting committee, a federation of representatives of visiting committees, known as the Mental Hospitals Association, was formed, and in the following March this body, with representatives of the union, established the Joint Conciliation Committee upon which employers and employees were equally represented This joint committee, in effect a Whitley council, has remained steadily active until now Among the more important milestones in its career are the stabilisation of rates of pay after the 1914–18 war and the introduction, in 1935, of the 54-hour week for mental nurses with two clear days off duty in each week There still remained, however, a difference in the rate of pay between rural and urban areas The efforts of the joint committee to remedy this culminated in October, 1941, when they published recommendations about conditions of service and pay which had crystallised from 19 years' experience of amicable and continuous negotiations.

During that period the manifold aspects of mental nursing had been considered as they were presented in individual cases from hospitals all over the country These consolidated recommendations were felt to be so important in official circles that their acceptance by visiting committees and mental hospital staffs was made a condition for the enforcement of the Mental Nurses (employment and offences) Order 1941, issued partial destruction of the parasites, and the observation of a worm with its head apparently buried in an inflamed area of colonic mucosa, strongly suggest that the diarrhœa was the result of the infestation Judging from the degree of anæmia, the diarrhœa and the sigmoidoscopic findings, this case seems to have been more heavily infested than the average, with the more distal part of the large bowel affected to an unusual extent

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[1] Trail, R R *Lancet*, 1942, i, 609

[1] See *Lancet* July 18, p 79

I wish to thank Prof R S Aitken, of the department of medicine, and Dr D Robertson, lecturer in agricultural zoology to the university, for their help

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Reviews of Books

Year Book of Neurology, Psychiatry, and Endocrinology, 1941

Editors HANS H REESE, M D, NOLAN D C LEWIS, M D, ELMER L SEVRINGHAUS, M D Chicago Year Book Publishers, London H K Lewis Pp 768 16*s* 6*d*

THE editors of this invaluable compendium give little or no space to articles which merely turn over old furrows The endocrinology section is therefore the most lively and rich in material, the section on neurology is of equal length but contains many articles which might with as much propriety have been included in the psychiatric section shorter by a third than either of the other two Inevitably the European contributions are scanty compared with those of earlier volumes, and some of them date from the latter part of 1940, but the American and British output for 1941 is fully represented, and the clinician or research worker, bereft of his customary abstracting journals can turn with confidence and some gratitude to this conspectus The editorial notes are concise and plentiful—except in the psychiatric section—and helpfully critical, the abstracts are competent and 130 figures and illustrations amplify the text A fifth of the psychiatric section is devoted to military aspects In the endocrinology section Professor Sevringhaus lays timely emphasis on the need for conservative diagnosis of endocrine disorders, quantitative methods should be employed and the time is at hand, he suggests to insist that these potent materials be used with due respect for what good or harm they may do

Fractures and Dislocations

KENNETH M LEWIS, M D, F A C S, assistant clinical professor of surgery, New York University College of Medicine London Humphrey Milford, Oxford University Press (Medical Outline Series) Pp 217 12*s* 6*d*

IN this brief account of his methods of treating fractures Dr Lewis sets out to simplify description by tabulating the whole work This does not make for easy reading and a beginner might find it incomprehensible He describes in detail the mechanical aspects of fracture treatment, but there is no discussion of alternative methods—which is a pity, for many of his methods will not prove generally acceptable Thus he recommends carrying a pail of water for the stiff elbow, Thomas splint traction for humeral neck fractures, with no differentiation of adduction and abduction types of fracture, the use of Kirschner wire traction in many fractures of the upper extremity, and resumption of weight bearing six weeks after a dislocation of the hip Blind nailing is recommended for all intracapsular fractures of the neck of the femur, irrespective of type, and without discussion of the complications which may follow these fractures Local infiltration "about the fracture" is advised for anæsthesia in reducing Colles fractures, but no mention is made of the infiltration of the hæmatoma, which is essential if adequate anæsthesia is to be obtained This book, giving as it does precise and formal directions for almost all types of injury should be useful to the inexperienced who may at short notice, in these days of sudden violence, be called *on to treat fractures*

The Blood Bank and Technique and Therapeutics of Transfusions

ROBERT A KILDUFFE, M D, F A S C P, director of laboratories, Atlantic City Hospital, M DEBAKEY, M D, assistant professor of surgery, Tulane University of Louisiana London Henry Kimpton Pp 558 37*s* 6*d*

THE appearance of this book is timely Its scope is wide, for it covers in detail in sixteen chapters the field of intravenous therapy with blood or blood products, including the military aspects, the rationale and the pitfalls of transfusion, blood-grouping, the cleaning and maintenance of apparatus, the technical procedures involved in running blood banks and the production of wet and dried plasma, and the history of transfusion The authors have attempted to sift and digest an immense volume of published writings Consequently parts of the book are uneven, and the reader is presented with a mass of facts, many of them contradictory, without being guided as to which to accept and which to reject *Particularly is this so in the technical sections* where numerous different methods and types of apparatus, generously illustrated, are described Some statements are surprising for instance, that 3 physicians and suitable assistants working for four hours can bleed 32 donors, removing up to 800 c cm from each It is apparent that the authors have not yet gained experience in the large-scale collection of blood and the preparation of *blood products, but these are only minor* blemishes in a well-produced and informative book

Clinical Aspects of the Electrocardiogram

Including the Cardiac Arrhythmias (4th ed) HAROLD E B PARDEE, M D New York Paul B Hoeber, London H K Lewis Pp 434 35*s*

IN this book the possible variations in the cardiogram in disease are described in detail but seldom illustrated The theory of the cardiogram is also fully discussed, much attention being given to mathematical treatment of the electrical axis and to consideration of vectorgrams These aspects although of great interest to the cardiologist have little immediate application to clinical medicine Dr Pardee's views on the best sites for chest leads and on the naming of the peaks in aberrant types of QRS complexes deserve attention Specially useful is the chapter on the construction and operation of the electrocardiograph

Encephalitis A Clinical Study

JOSEPHINE B NEAL, M D, Sc D, F A C P, associate director of the bureau of laboratories, Department of Health, New York, clinical professor of neurology, College of Physicians and Surgeons, Columbia University New York Grune and Stratton Pp 562

DR Neal is well equipped to lead a team of six distinguished collaborators, for she has been studying encephalitis since she became secretary of the Matheson commission in 1918 Her own contributions, which are entirely clinical, include a description of the primary and secondary virus infections of the central nervous system, a full account of the course of epidemic encephalitis and a short and conservative chapter on its treatment Dr Tracy Putnam gives a short account of his original work on the surgical amelioration of symptoms, usually undertaken in hope and abandoned in despair A section on epidemiology is written by Dr Muckenfuss, and on psychiatric complications in adults and children by Dr Rosner and Dr Bender The most important part of the book, by Dr L D Stevenson, deals exhaustively with the pathology of every form of encephalitis yet recognised in man He even includes such widely differing and apparently irrelevant subjects as disseminated sclerosis, arsenical encephalopathy, Jamaica ginger paralysis, and anoxæmia Publication is timely for the book brings together a fund of knowledge of diseases which acquire especial significance in time of war

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MR R J R FARROW, a principal officer in the Ministry of Health, has been appointed deputy registrar general

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candidate feel he is being put through an inquisition or that his fitness is being unfairly judged by people ready to read much meaning into every look and movement. During the three days he is at the centre he will have opportunities of showing how he behaves when he is tired, when he has to devise ways of overcoming natural obstacles, when he is discussing plans and problems with his fellow-soldiers. His intelligence, measured by the customary psychological tests, will also be assessed by combatant officers who see him dealing with practical situations that they have contrived for him—situations in some ways similar to those which will confront him in the field. The psychiatrist will interview him, unless he is obviously too good or too bad a candidate to need any such examination, and will appraise his personality; any neurotic traits that he may have must be set against his other qualities, and a fair judgment made as to his stability and fitness to lead others in the stressful conditions of modern warfare. But these are not the final judgments. The president of the board is responsible for the decision that the candidate may proceed to an officer cadet training unit or not.

Standardised psychological procedures play only a small part in this whole. Tests of personality are used, but modestly; the results are not taken at face value but passed on to the psychiatrist who must evaluate them in the light of his clinical experience and findings. It would be dangerous to give a lot of weight to the results of projection tests and other such procedures while they are still somewhat equivocal—they can be double-edged tools. If inexperienced persons without thorough psychological training were to be allowed to pronounce upon them, and these interpretations were taken seriously, it would be devastating. But this is a branch of psychology in which there has lately been much activity and methods are likely to become increasingly reliable. The same principles must be followed in their use as are employed for selection of men generally; thus no procedure should be adopted wholesale until its value has been critically checked against the results of the test which real life affords. Only when predictions based on selecting procedures are shown to tally with the success chosen men subsequently show in the job should such procedures be given their letters of credit.

Annotations

BITTNER AND HIS FORERUNNERS

Dr. Georgiana Bonser, holding a Brotherton fellowship in cancer research at Leeds, has confirmed J. J. Bittner's remarkable observation that mice babies of certain inbred strains derive from their mothers' milk something that promotes the development of breast cancer. Bittner suggested that this factor is a virus. Bonser transferred newborn male sucklings of RIII strain (high breast cancer) mothers to mothers of CBA strain (low breast cancer) and vice versa before injecting them with triphenylethylene, and she has noted an almost complete reversal of the incidence of mammary cancer appropriate to the strain. Previously any form of œstrogenic treatment had failed to induce mammary cancer in males of an immune strain. Some CBA females suckled by RIII foster mothers have developed spontaneous breast cancers for the first time in the experience of the laboratory. Prof. R. D. Passey in his report[1] to the Yorkshire Council laments that Bittner's discovery seems at the moment to make the cancer problem even more complicated than had been supposed previously. It certainly offers unexpected support to the virus theory of the cause of cancer, but seen in perspective it is a natural sequence of a technique which has enabled the observer to isolate at will and study separately all the factors that play a part in the development of tumours.

In his foreword to the report Sir Harold Mackintosh says it is broadly true that cancer research was not seriously attempted until after the last war. But it is a pity to forget the probing mind of Rudolf Virchow or to overlook that all but one of the clues to the cause of cancer which we now possess were discovered by 1917. Virchow established the foundations of our knowledge of the cellular basis of cancer and laid the foundation for its micro-anatomical classification; he drew attention perpetually to the prolonged and chronic nature of the stimuli which preceded cancerous change. Ribbert revealed the autonomous nature of tumours; they grow *aus sich heraus*, as he put it. Pott as long ago as 1770 associated the prolonged exposure of chimney sweeps to soot with the high rate and early incidence of scrotal cancer in young men following this occupation. He sought to get legislation to prevent this occupational disease. Murray in 1911 showed that mice in whose ancestry cancer of the mamma has occurred not further back than the grandmothers are more liable to develop the disease than mice whose cancer ancestry is more remote. Yamagiwa and Itchikawa combined Pott's observation with Virchow's teaching on the chronic nature of the stimulus required and applied tar for months on end to the skin of mice and rabbits. They proved in 1917 that cancer could be produced at will by a chemical agent. Rous in 1911 transmitted fowl sarcomas by means of cell-free bacteria-free filtrates of tumour material. Loeb in 1916 combined Murray's observation of a hereditary tendency in mammary cancer of mice with a brilliant guess that ovarian secretion had something to do with it. By removing the ovaries of very young female mice of a strain inbred to develop mammary cancer, he prevented the incidence in ovariectomised mice of this disease in the expected high numbers.

These clues have been relentlessly followed up. Kennaway divined the nature of the carcinogenic factor in tar (it must be composed of carbon and hydrogen) and with Cook synthesised benzpyrene and other carcinogenic chemicals. They showed also the possibility of a similar synthesis in the body by the production of methylcholanthrene. Lacassagne took the ovarian hormone folliculin and proved that Loeb's ovarian influence was due to the secretion of this substance. Rous combined a newly discovered filtrable agent (the Shope papilloma) with a chemical agent (tar); together they produced a quality and vigour of tumour growth which never results from either alone. After Loeb had started to unravel the factors responsible for the development of hereditary mammary cancer by showing that that disease failed to develop in the absence of an ovary, there still remained an apparent hereditary influence. The discovery of the nature of this influence is the only really new clue since 1917. In 1937 Bittner and Little proved that it resided in and was transmitted in the mother's milk. If young mice of a high cancer lineage were removed at birth from all contact, especially suckling, with their mothers and nursed by mice of a strain free from mammary cancer, they failed to develop the disease even though they were thoroughly treated with œstrin. The mother's milk of the high cancer strain contained the essential factor. But Bittner has shown also the existence of a true hereditary influence transmitted as well by the father as by the mother. These long-established lines of research are still the mainstay of cancer research.

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[1] Yorkshire Council of the British Empire Cancer Campaign: 16th annual report (1941–42) from the department of experimental pathology and cancer research, University of Leeds.

by the Minister of Health under the Defence (general) Regulations of 1939 (commonly known as the Standstill Order). It was thus ensured that no nurse would be obliged to continue in the service of a mental hospital unless conditions and pay were favourable enough to meet with Government approval. The recommendations perpetuate the 54 hour week as the standard maximum and provide, in the case of male nurses, for a commencing (gross) salary of £2 10*s* a week, for women nurses of £2 per week, rising to £4 3*s* 6*d* and £3 13*s* 6*d*. These rates do not include war bonuses or increments for passing examinations and charges are made to the residents for board and lodging. Official blessing would not, of course, have been given to these conditions unless they were reasonably widely accepted; and in fact nearly every mental hospital staff is represented by a local branch of what is now the Mental Hospitals and Institutional Workers Union, while of the 76 local *authorities in England and Wales which manage* mental hospitals 69 are members of the Mental Hospitals Association. The joint committee is thus a negotiating body representing nearly 20,000 mental nurses who are union members out of a total estimated at 30,000, and 69 local authorities who are responsible for some 86 mental hospitals out of a total of a little more than 100. It is greatly to the credit of the governing authorities of mental hospitals and their staffs that they should have evolved a good machine for solving their own problems.

Nevertheless nursing is a national problem and mental nursing is only one aspect of the care of the sick. Indeed everything which tends to set the mental patient apart from other sick people is reactionary and smacking of the old fancy of diabolic possession. There will, perhaps, always be room for a conciliatory body specially devoted to the needs of the mental nurse, but this must form part of a considered scheme covering the needs of nurses as a whole. Whether the mental nurse is at present regarded merely as an attendant, as Lord MANDERS seems to think, is beside the point. If she is in a hospital or a ward where the experience of general physical illness is considerable, and if the matron and the sister tutor know their job, the nurse becomes capable in her profession; if she is kept for years in a chronic ward, lacking the stimulus of refresher courses and a change of experience, she declines into an attendant; who would not? Nor is it possible to make dogmatic assertions about the intellectual standard of mental nurses; in most places the rank and file take the RMPA instead of the State examination, and the standard of the latter is admittedly more exacting. There are evidently grounds for a levelling up of standards, but not for isolating mental nursing from all other branches of the profession. The care of mental patients may demand special qualities in the nurse, but mental patients are not immune from the physical illnesses whose treatment requires adequate training in general nursing. Contrariwise, the mental problems of patients in general hospitals are beginning to receive attention and thus the general nurse needs experience of mental hospital work as part of her training. Some method of interchange between nurses in general and mental hospitals would be of benefit to all parties, including the patients. Oxford and Exeter have tried it out on a small scale, but it can hardly be achieved on a large one until rates of pay, pensions and conditions of service in the two branches are dealt with comprehensively by the same body. We can hardly be wrong, following the lead given by the Athlone Committee, in asking a subcommittee of the Rushcliffe Committee to consider (without prejudice to existing agreements) the position of mental nurses, just as other subcommittees are considering the position of health visitors and school nurses. The Mental Hospitals Association and the Workers Union would place their knowledge and experience at the service of this mental nursing subcommittee, which would be amply represented on the main committee and work in collaboration with it. The past would thus be honoured without jeopardising the future.

LEARNING TO CHOOSE

Fas est et ab hoste doceri. It has been customary in the German Army to use psychological investigations to select officers and specialists; and a huge literature has accumulated[1] round the subject of "psychological warfare." Much emphasis is laid on the psychologist's estimate of a candidate's personality. The history of his life, with his ambitions, interests and successes, is studied and his behaviour analysed: what does his facial expression betray about his character, what are his gestures, what can be learned from his voice, his demeanour, his handwriting? His intelligence, his imaginative power (tested by asking him to describe the story which some pictures tell) and his persistence are assessed. His response to commands and capacity to lead and direct others must also be judged by practical tests. How much of this procedure, elaborately described in the technical journals, is still employed, what modifications and additions are customary, is unknown. But it is clear that there was much controversy about the psychologists' share in selecting officers and specialists, not only in the Army but also in the Luftwaffe, and that there were some sudden changes of policy. It is also clear that the final say rested with the commanding officer, not with the examining psychologists.

It is not to be supposed that the Germans alone had heard of applied psychology. Industrial psychology, with which all this has a close affinity, has been most actively pursued in our own country, in the United States, and in Russia and France. All the major participants in the 1914–18 war used tests for aviation pilots, hydrophone operators and other specialists. We can hardly have forgotten that, nor have failed to profit by the advances made since 1918 in vocational and other branches of psychology. Is there then anything for us to learn from the enemy? We can perhaps let him teach us that officers are specialists, about whose selection we should take great pains and use whatever aid psychology can afford us. We can also let him unwittingly teach us, when we scrutinise critically what he writes about the matter, that psychology cannot yet afford us much help in judging character and that a pretentious array of "characterological" tests is a dangerously uncertain way of deciding who is fit to be given the training of an officer. There is certainly no need for us to play the sedulous ape in this, nor do we. The procedure at one of our officer selection centres is not likely to make the some cases of so called idiopathic steatorrhœa arise from a transitory giardial infection. They quote the fatal case in an adult reported from Dublin two years ago[8] and record the case of a boy aged 9 in whom chronic steatorrhœa was associated with stunting of growth, anæmia and radiological evidence of disorganisation of the mucous membrane of the lower part of the small intestine. In this boy encysted forms of *Giardia lamblia* were found in mucous shreds obtained after severe purgation though no parasites were seen in the ordinary stool. Miller[9] has noted the finding of giardia in the stools of cases of cœliac disease, and Manson-Bahr[10] records examples of giardiasis which, as far as the stools were concerned, resembled tropical sprue. The protozoa are provided with sucking discs by which they attach themselves to the mucosa of the ileum, and if present in sufficient numbers they might interfere with fat-absorption by the villi. There is no suggestion, however, that the Dublin cases were infested to this degree. It seems strange, if some cases called cœliac disease arise from giardiasis, that this condition is not more often seen in the tropics. The effect of mepacrine in such cases may not settle the question, for if O'Donovan and his colleagues are right damage to the small gut may remain after the giardia has died out. Certainly in their case no striking improvement has followed disappearance of the parasite. There can be no certainty about this hypothesis until a sufficient number of cases of cœliac disease have been studied in their early stages. Meanwhile, it seems fairly certain that, like its relative *Giardia muris* in rats, *Giardia lamblia* is a potential source of harm.

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[1] German Psychological Warfare. Committee for National Morale, New York, 1941.

THRESHOLD FLUOROSIS

THE question why the inhabitants of Tristan da Cunha have such excellent teeth has been used as a test case for every theory regarding the ætiology of dental caries. Yet another possible answer has now been given by Sognnaes.[11] Instead of the usual rapid inspection of the island's inhabitants during the few hours of a steamer's call, he spent some weeks on the island and had ample time for observing the environmental conditions which might affect dental structure. He confirmed the remarkable freedom from dental caries, but he also noted the white spots characteristic of a very mild degree of dental fluorosis, which he has aptly described as "threshold" fluorosis. All the water used by the islanders came from a spring containing 0 2 part per million of fluorine, and in addition their dietary included much fish, whose tissues contain ten times as much fluorine as that of land animals. Later, on return to the United States, Sognnaes and Armstrong[12] determined the fluorine content of teeth obtained in Tristan da Cunha. They found that deciduous teeth from the island all had a definitely higher fluorine content than corresponding non-fluorosed sound teeth from Minnesota analysed by the same method. In the islanders' permanent dentition Sognnaes had noted a greater degree of mottling in the front teeth than in the molars, and the most fluorine and least caries were also found in the front teeth. These results confirm the observations of American[13] and British[14] observers on the relative immunity to dental caries associated with drinking-water containing fluorine.

On another page Kemp, Murray and Wilson raise the question whether the quantities of fluorine commonly found in British drinking-waters, sufficient to produce dental fluorosis, will also produce skeletal changes during the growing period which may lead to incapacity later in life. In parts of the world—Madras and South Africa—where the inhabitants drink water of high fluorine content, skeletal changes have been reported consisting of a progressive sclerosis of all the bones resembling that seen in industrial fluorine poisoning in cryolite workers. In the present investigation in Oxfordshire villages and at Maldon in Essex spinal changes of the adolescent kyphosis type were found associated with mottled teeth, but the correlation was by no means definite, and Spira[15] has lately demonstrated that more than 22% of a mixed group of British adults had some degree of dental mottling. A much larger controlled series, watched for years, will be required to settle whether fluorosis must be considered one of the causes of spondylosis deformans.

THE VEINS AND THE MUSCLES

WE are still ignorant of the whole story of how the blood is returned to the heart by the veins but there is good evidence, as Yandell Henderson[16] shows, of the important part played by muscular contraction. During exercise the rôle of muscular contraction is obvious; each muscle acts as a peripheral pump, or as Henderson neatly describes it a booster—i e a pump used to increase the pressure of fluids. In this way the five fold increase in the output of the heart which occurs during exercise is largely accounted for. At rest the same mechanism is probably at work the difference being a quantitative and a qualitative one. Two factors come into play here. In the maintenance of tonus in the muscles at rest a variable if small, number of fibres in every muscle are contracting all the time, and the alternating contraction and relaxation of these minute peripheral pumps or boosters in the muscles is largely responsible for maintaining the flow of blood in the veins. The other factor which assists in this process is the difference between the intramuscular pressure, higher than atmospheric pressure as the result of muscle tonus, and the subatmospheric pressure in the thorax. Thus even at rest there are adequate forces present in health to ensure the return of the venous blood to the heart. A necessary corollary is that these forces are to a large extent dependent on the state of the spinal centres responsible for the maintenance of tonus in the somatic muscles. Skeletal muscle has practically no intrinsic activity; as Henderson expresses it, their behaviour is imposed on them from the central nervous system. The bearing of this on the ætiology and treatment of shock is obvious. In shock, whatever the precipitating factor may be—whether trauma, infection or pain—there is failure on the part of centres in the nervous system. At one time it was supposed that this failure involved primarily the vasomotor centres, but it now seems as if the fault lies, at least in part, in the centres controlling the skeletal muscles, and that the failure of the peripheral circulation is due as much, if not more, to slowing of the blood-stream in the veins in the flaccid muscles as to pooling of the blood in the arteries or arterioles in the splanchnic area or skin, now recognised to be such a large blood depot. As a result of this slowing of the blood stream anoxia gradually develops in the tissues, a process which in turn results in increasing permeability of the capillary walls with oozing out of serum and probably some corpuscles, so that a state of oligæmia develops. In other words we have the triad of shock—bradyrhœa, anoxia, and oligæmia. Reports on the treatment of shock lend considerable support to this hypothesis. In shock unaccompanied by hæmorrhage the best results are obtained by the administration of serum; where hæmorrhage is severe whole blood must be administered. In both types of case the administration of oxygen is essential. Where the shock is unaccompanied by bleeding, restoration of the circulating blood-volume, adequately oxygenated, is sufficient, along with the other essential lines of treatment such as

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[16] *Science*, 1942 95, 539

SOCIAL MEDICINE GETS A CHAIR

A NEW spirit is stirring in medicine, as the focus of attention swings from the negative to the positive aspects of health. The cure of disease has fascinated us for centuries, partly because success when it comes is so immediately rewarding and partly because one sick man makes a more dramatic appeal than ninety-nine not obviously in danger. Moreover, in the excitement of research it is possible to lose sight of the whole in enthusiasm for the part. That an impulse to share knowledge is abroad is manifest in proposals for health centres, for regional cancer control, and in the foundation of such units as the London Hospital department of psychiatry and neurology. Alongside this desire to pool knowledge a wider conception of the functions of medicine is growing up. This is no sudden awakening to the latent possibilities of preventive medicine, for we have been aware of those long enough: advances in public health such as vaccination, purification of water and rising standards in public and personal cleanliness have all helped to reduce disease. It is rather a growing sense of social responsibility among doctors—a realisation that since many diseases depend on social conditions it is the business of the profession to study those conditions and propose remedies. This is why the foundation, by the Nuffield Provincial Hospitals Trust, of a professorship and institute of social medicine at Oxford University is such a landmark. The trust proposes to devote £10,000 a year, for ten years in the first instance, to this purpose. The task of the institute will be to investigate the influence of social, genetic, environmental and domestic factors on the incidence of disease, and to seek and promote the protection of the individual and the community against forces hindering the development and maintenance of full mental and physical capacity. If the university wishes, the institute will also provide instruction in social medicine for medical students and doctors approved by the board of the university faculty of medicine. It is to be hoped that the opportunity will be taken to establish a nursing section in the new institute, for the progress of social medicine depends on public as well as medical education, and in this the public health nurse of the future, by whatever name she is known, must play an increasing part both as an investigator and a teacher. The institute will be administered by a committee on which the trust will be represented by six members who will help to link up the institute with research institutions elsewhere.

OIL AND PETROL IN THE LUNG

FLUIDS which intensely irritate the bronchial mucous membrane may be partly removed by coughing, but the paroxysms may aggravate the risk of suffocation, and in the case of volatile poisons the rate of absorption is so great that coughing does not appreciably reduce the risk of remote toxic effects. This is illustrated in the case reported recently by Cope[1] of aspiration of petrol into the lungs. Attempts to cough it up seem to have been hampered by acute dyspnœa, and unconsciousness supervened in a few seconds. The lung and even the pleura is liable to sustain considerable damage in such cases. Machle[2] in a review of gasoline intoxication mentions hyperæmia, petechial hæmorrhages, subpleural extravasations and gross pulmonary hæmorrhages in which the alveoli may be filled and the epithelium become necrotic in entire lobules. Bronchitis is common and several instances of pleural effusion have been recorded. Poppyseed oil, the base of iodised oil (*B.P.*), is often injected into the lung as a diagnostic agent and occasionally as a remedy. Cases of iodism are reported from time to time after the use of this preparation, but the oil itself appears to give no trouble, even though years may elapse before the last traces of it are removed by coughing. Yet neurologists are showing increasing reluctance to inject it into the spinal theca because signs of irritation of nerve trunks are occasionally seen, so that it may be premature to conclude that iodised oil is harmless in the lungs. The reputation of liquid paraffin as a bland mechanical laxative has been questioned by American investigators,[3] and it has been shown to cause pneumonia, and even the formation of paraffinoma when aspirated into the lungs. Kaplan[4] states that since 1925 a total of 411 cases of oil pneumonia have been reported, and that in 68% of the cases liquid paraffin was wholly or partly responsible. By applying a simple histochemical technique, he was able to prove, in a case of oil pneumonia under his care, that liquid paraffin and cod-liver oil were present in the lung, which showed the "typical structure of an acute and chronic interstitial type of oil pneumonia." The clinical picture and pathological findings in cases of petroleum aspiration on the one hand and liquid-paraffin aspiration on the other are evidently closely related not only to the intrinsic toxicity of the material but also to the physical and chemical properties of the different types of oils, and these in turn determine the rate of absorption through the lung. In recent years there has been a considerable increase in the number of cases of unresolved pneumonia, associated, it seems, with the use of the sulphonamides; but the widespread habit of taking liquid paraffin as a laxative, and the administration of cod-liver and other vitaminised oils to children should be borne in mind when considering the differential diagnosis. Moreover these oils are often inflicted on debilitated and prostrate patients by force majeure, and for these aspiration into the lungs is a real danger.

EVEN THE GIARDIA MAY TURN

INFESTATION with *Giardia lamblia* is almost universal among the natives of India, Egypt and Iraq, and there it seems as a rule a harmless guest. Elsewhere it is also common—in Norway, for instance, where Boe[5] has lately demonstrated that at least half of a fair sample of the healthy population carry some intestinal protozoon, in 5% the parasite was the giardia. A variety of symptoms have been ascribed to giardiasis in Latin America and the United States but it has been difficult to decide whether this is not merely a secondary invader which gains a footing when other causes of ill health have rendered the intestinal or biliary tract suitable for its multiplication. In Norway patients with diseased gall-bladders were found to be more often infested than healthy people, but otherwise the clinical findings were inconclusive. The introduction of a specific parasiticide against giardia—mepacrine hydrochloride ('Atebrin')—seemed likely to settle the question of its pathogenicity. At the Mayo Clinic Kyser[6] analysed the symptoms encountered in 100 people with giardia in the stools and the effect of treatment with mepacrine in some of them. In 11 cases the giardiasis was asymptomatic. The main symptoms found in the rest were diarrhœa, with 2–20 loose stools daily, pain or discomfort in the upper or less commonly lower abdomen, nervous symptoms such as tiredness and irritability, intermittent fever and vomiting attacks. Of these, diarrhœa and abdominal discomfort occurred in nearly two-thirds of the patients; the other symptoms were rarer and their connexion with the parasite less definite. In 35 patients a five-day course of 1 gramme of mepacrine three times a day was given, followed by re-examination of the stools. In all but one the parasites disappeared from the stools, and in 13 the symptoms were completely relieved for a significant period. O'Donovan, McGrath and Boland[7] of Dublin have raised the question whether

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[1] Cope, C. L. *Lancet*, 1942, i, 469.

[2] Machle, W. *J. Amer. med. Ass.* 1941, 117, 1965.

[3] See *Lancet*, 1941, i, 219.

[4] Kaplan, L. *Amer. J. Dis. Child.* 1941, 62, 1217.

[5] Bøe, J. *Nord. Med.* 1942, 14, 1495.

[6] Kyser, F. A. *Proc. Mayo Clin.* 1941, 16, 493.

[7] O'Donovan, D. K., McGrath, J. and Boland, S. J. *Lancet*, July 4, 1942, p. 4.

Special Articles

THIRTY YEARS OF NATIONAL HEALTH INSURANCE

R W Harris o b e

HAIRMAN OF THE LONDON MEDICAL SERVICE SUBCOMMITTEE,
OMETIME AN ASSISTANT SECRETARY IN THE MINISTRY OF HEALTH

THE Editor—doubtless having recalled that I am still ctively associated with the scheme of National Health nsurance and that my association goes back as far as the day of the first reading of the bill in 1911—has reminded me that today the fifteenth of July is the thirtieth nniversary of the coming into operation of the scheme, and has asked me to jot down a few notes on the subject

Sir Arthur Salter is speaking in the House of Commons n secret session on the shipping situation He will have no time to recall that he was Charles Masterman's private ecretary in 1912, sitting up half the night drafting answers to a record number of questions in an attempt to atisfy the voracious appetite of the House of Commons of that day These hungry members were actually being egged on by doctors who did not like the Insurance Act—did not like it at all—and there was still time on the fifteenth of July 1912, to force or worry Parliament into moulding the measure more to their liking, or better still to sweep the whole thing back into the obscurity from which it should never have emerged , that was how the medical profession seemed to feel at that time

There was still time , for the fifteenth of July was only the beginning of "stamp-licking" Money, through the medium of deductions from wages and stamps affixed to cards must flow into the national coffers for six months before the doctors were to come on the scene January, 1913, was the time for the real "opening" so far as the doctors were concerned, and in the meantime they could continue to enjoy the privileges of looking after the working population with all the advantages and disadvantages attaching to private practice And when the appointed day in January came, the long gathering storm clouds just quietly went elsewhere, the threats of a "strike" of the whole medical profession—that is, I'm afraid what vulgar people called it—subsided, the Exchequer had found another half a crown for the capitation fee, and the signed statements taken from nearly the whole profession, refusing to take office under the scheme, were unceremoniously consigned to the BMA waste-paper baskets National health insurance was an accomplished fact The thing was working

The Lord President of the Council is too busy today with the Home Front to recall the fifteenth of July, 1912, when a certain youthful John Anderson, only recently arrived at the Insurance Commission from the Colonial Office was dealing with minor problems in that masterful way of his, and was soon to leap forward to be secretary of the commission, dominating the scene , and thence onwards to many increasingly important fields of activity, impressing on them all the hall-mark of his personality Sir Maurice Gwyer is too absorbed in the problems confronting him as Lord Chief Justice of India to recall the days of 1912 when he was drafting with consummate patience the hundred and one regulations and orders which were to make the NHI scheme function He may still chuckle about the "Henry the Eighth" clause which some inspired person had put into the bill, enabling the Insurance Commissioners to do anything necessary to make the scheme work It was good stuff, even if it did lead Lord Hewart to write down some nasty things about bureaucrats

These three notable figures of today, Anderson, Gwyer, and Salter, are but a fraction of the great number of eminent people who were associated with the national health insurance scheme at its inception This is not the place for me to recall the men—notably that great figure, Sir Robert Morant—who were responsible for the launching of this scheme and for seeing it through its early years, but I must find space to say that my colleague W J Braithwaite, with whom I had the honour to work during the years 1911–12, was more than anyone else in the country responsible for placing this scheme on the Statute book He was a man of genius, and without him even the great genius of Lloyd George could not, I venture to assert, have fashioned and forged his mighty measure The first medical insurance commissioner, Smith Whitaker was roundly abused throughout the profession for going over to the "camp of the enemy," as they described it, and giving up his post as medical secretary of the BMA Why he should be thus abused I have never been able to discover He was the man of all others most fitted to contribute to the administration of national health insurance the point of view of the medical profession He went on to the commission with that object and that object only in view, and the medical profession owes him tribute

Why did the medical profession of that day view with such hostility the revolution which was brought about in the conditions of medical practice ? Of course it was a revolution, and I think it was the fear that the old bad cheap-and-nasty club practice was to be imposed on the nation, and that the standard of medical treatment was to be lowered that worried the medical men Obviously the money difficulty caused much unrest , for, when the capitation fee was fixed at a figure which was regarded as reasonable by the profession the signing-up of the new contracts ready for the start of the scheme in 1913 went ahead quite gaily In the thirty years which have gone by a new generation of doctors have grown up who know nothing of the days before National Health Insurance existed , they must often wonder what all the fuss was about and why it should have been so generally accepted that a doctor will give less valuable service because he is paid by a capitation fee instead of by means of a fee for each attendance

What has National Health Insurance achieved ? As a scheme for the cure and prevention of sickness, which it was, it has on the whole been a conspicuous success It has been accepted as such over and over again by the representative body of those engaged in practising it, and there is no doubt at all that as an organised scheme of medical service for the working population it has justified itself in its operation But who will deny that in the field of prevention the expenditure of so many millions of money might have been made to better advantage ? The trend of medicine towards prevention rather than cure is slow, painfully slow But at long last we seem to be on the brink of great changes and experience gained in the NHI scheme, with all its defects, will surely be of great value in the days ahead when effect will undoubtedly be given to the recommendations now being framed by the BMA Planning Commission That, of course, is not to say that the recommendations will be adopted either in their entirety or with their limitations, but we are on the eve of the establishment of some form of unified national medical service That is without doubt

Doctors and approved societies, starting in 1912 from the unpromising datum line of mutual distrust, have progressed to the position that they trust and respect one another, and really get along quite nicely I am confirmed in this view not only from personal observation on the London medical service subcommittee (where I as chairman am supported—or, better still, guided—by three representatives of the profession on one side and three of the societies on the other) but also because formal complaints about certification have almost vanished from the scene And that can only have come about because there has been a better understanding and many informal settlements—often promoted if London is any guide, by the good offices of the clerk to the insurance committee These committees were created to reconcile the doctors to some measure of administrative control by the approved societies Of pure and unadulterated control by the societies, they would have none But in an insurance committee, where the doctor could sit cheek by jowl with the society's secretary, a happy compromise was found And whatever kind of rabbit comes out of Beveridge's hat this autumn, some seasoning of this kind will have to be found when the rabbit is served up on the table Sir William is studying the whole problem of social insurance administration Arising out of his survey one may anticipate that medical benefit will be neatly severed from the administration of the NHI cash benefits And in the process of reconstructing something better there should be no place for the sweat and blood of 1912

In thirty years the medical profession have learned the value of organisation in treating the mass of the morphia and warmth to abolish the anoxia and restore the nervous centres and therefore the muscles, to a normal condition Where there has been definite loss from the body of the oxygen carrying red blood corpuscles, restoration of the circulating blood volume, even with the administration of oxygen, is not enough, for serum will not transport oxygen red blood cells—whole blood—must be given Three years of war have not yet solved the primary problem why the nervous centres *fail* Henderson, perhaps not unnaturally, strongly favours the view that alterations in the respiratory gases—carbon dioxide and oxygen—are responsible The evidence for this view is strong but by no means overwhelming, and extensive investigations are being carried out on this point both here and in the United States Fortunately for the patient, practice is in advance of theory

WHAT'S WHAT IN EMERGENCY

NOWHERE to go nothing to eat and nothing to do To meet the lot of those rendered homeless by enemy action, central health departments have been at pains to offer instruction and advice the Department of Health for Scotland has now codified some thirty circulars about information centres in a little pamphlet[1] issued at a modest price The first part deals with publicity, the third with the central index which is a necessary part of the machinery The second part is human it tells all about information centres—selection of premises their equipment and adaptation staffing and arrangements for setting them up The centre should be in a school public library, hall or other suitable building not part of the municipal offices Plenty of seats, a canteen for light refreshments, tables to write at, simple first aid appliances and a telephone help to give a confident club like air to the place , official needs are served by large notice boards, armlets card indexes and of course supplies of the right forms and good blackout and window protection Voluntary workers take charge—anything from four to twenty of them according to the size of the centre—under general supervision of a director who will guide inquirers to the departmental officers attending to give expert advice and assistance When the need arises, the decision to open an information centre must be reached quickly , to secure this the department insists that responsibility for taking the decision should be delegated in advance to a senior official The pamphlet will be a pillow book to this delegate and all his satellites As the Secretary of State remarks in a foreword, much can be done to allay distress by making prompt and accurate advice available and by using experience of past raids to meet present difficulties When the bottom suddenly drops out of people's lives such a centre steadies them and helps to restore their shaken sense of security

NEW BROOM IN THE GUT

THE great reduction of coliform bacteria in the fæces of mice given sulphaguanidine by mouth and the beneficial action of this drug in bacillary dysentery[2] raised hopes in the surgeon that it would be useful in intestinal surgery Much of the secondary infection that complicates colostomy and bowel resection arises from leakage of *Bacillus coli* into the peritoneal cavity or around the abdominal wound, and intestinal surgery would be safer and easier if this organism could be eliminated from the bowel before and after operation However, sulphaguanidine proved disappointing, for reduction of the coliform bacteria was accomplished irregularly and only in cases where there was no intestinal ulceration[3] Moreover, experiment showed that intestinal obstruction might allow undesirably great absorption of the drug from the small gut, which with impaired renal funct would result in high blood levels and a greater risk toxic reactions But the search for the ideal intesti antiseptic—a substance with high antibacterial pow low toxicity and poor absorbability—continu Succinyl sulphathiazole [2-(*p* succinyl aminobenze sulphonamido) thiazole or sulphasuxidine] one of series of dicarboxylic acid derivatives of various sulph amides prepared in the research laboratories of Sharp Dohme goes a long way to satisfying these requiremen This drug is effective against *B coli* and the dysent group but not apparently against the salmonellas, *proteus* or the fæcal streptococcus When the drug given by mouth to patients, the stools become soft odourless, flatus is greatly diminished, and the *B* content is reduced from many millions to 100-1 per gramme of wet fæces, a remarkable achieveme Ulcerative lesions in the bowel, active diarrhœa severe constipation retard but do not destroy its ciency Part of the drug appears in the fæces sulphathiazole, which Hawking[5] has shown to be m active than sulphaguanidine in suppressing the f flora There is also evidence that considerable amou of the drug are excreted in the bile,[6] and this may b step towards the effective chemotherapy of typhoid paratyphoid Large dosage—0 25 g per kg of bo weight daily in 5–6 doses—is recommended , only ab 5% of the drug is absorbed, giving blood concentrati usually under 1 mg per 100 c cm so that there is prac ally no risk of toxic reactions Firor, who has used drug in over 120 surgical patients, gives 4 hourly do for 5–7 days before operation, avoiding cathartics especially mineral oils, and continues treatment for days postoperatively when anastomoses have be performed Medically, besides bacillary dysentery, drug is recommended for the relief of abdominal diste sion in typhoid and in conditions with an associated ile

INFECTION FROM THE DROPPER

THE use of vasoconstrictors like ephedrine for treatment of colds and nasal catarrh has become popu in recent years By contracting the congested muc membranes they certainly give a sense of relief , whet they help to abort or cure a cold is another matt Indeed it has been suggested that their use increases risk of secondary infection by allowing bacterial pat gens easier access to the adjacent sinuses These seco ary bacterial invaders may already be present in nasal passages, but the risk of their being introdu from an outside source has just been demonstrated Gompertz and Michael[7] The ephedrine or some analo is usually dispensed in dropper bottles, and may or n not contain a small amount of an antiseptic or aroma oil which, in the presence of any nutrient material, little or no bactericidal action If therefore the drop is repeatedly inserted into the nostrils, it is liable to t back with it mucus, pus and debris which could supp the growth of any hardy pathogen contaminating dropper In fact, Gompertz and Michael have found t 19 samples of nose drops with droppers that had be used for at least one week were all contaminat *Staphylococcus aureus* being isolated from 16 of the By contrast, 6 samples from partly used bottles contain similar solutions without antiseptic and, more importa without droppers were all sterile The moral seems be that if you must use a dropper-bottle, buy a very sm one, allow no one else to use it and throw it away wh you've finished with it Alternatively, get your no drops in a dropperless bottle , pour out a little of solution into another container and be sure to rinse boil the dropper afterwards

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[1] Information centres a handbook on their organisation DHS memo no 43/1942 HMSO 6*d*

[2] See *Lancet* July 4, 1942, p 13

[3] Firor, W M and Jonas, A F *Ann Surg* 1941, 114, 19

[4] Firor, W M *Ibid*, 1942, 115 829

[5] Hawking, F *Lancet*, March 7, 1942 p 290

[6] Poth, E J *Ann Surg* 1942 115 831

[7] Gompertz, J L , Michael, P *J Amer med Ass* 19[illegible] 118, 128

Sweden was alone, among countries with sterilisation laws, in not having control of voluntary sterilisation They were supported in this opinion by the medical and social councils and various medical societies The working of the 1934 sterilisation law had shown that guarantees against sterilisation of such responsible persons on inadequate grounds were needed far more than measures to protect those incompetent to give consent In 1941 a new law was passed, defining the conditions for which sterilisation could be performed with the consent of the patient, and providing for the operation to be done without consent in those incompetent to give it On eugenic grounds, a patient may be sterilised to prevent inheritance of physical defect or other serious disability , and on medical grounds when there is risk that owing to illness, physical defect or weakness pregnancy might cause serious harm to life or to physical or mental health On social grounds patients may be sterilised who seem on account of mental defect or disease or other psychic abnormality to be incapable of caring for children Those guilty of antisocial behaviour can also be sterilised, and this covers chronic alcoholics and criminals, regardless of their mental state In other Scandinavian countries sterilisation of sexual *criminals implies castration, but this is not yet the case* in Sweden, though proposals for such an extension of the law are under consideration

Under the Swedish law of 1941 sterilisation may only be undertaken with the consent of the medical council, unless there are urgent medical grounds for it Thus a woman able to give consent may be sterilised without official sanction if, owing to physical defect or disease, pregnancy may seriously endanger life or health, provided the doctor performing the operation and another doctor certify in writing that the indications are present The written certificate may be omitted if delay would endanger life—for example where a surgeon is terminating pregnancy by an emergency operation on account of illness or defect, and wishes at the same time to prevent further pregnancies The woman, or if that is impossible a near relative must have given consent Women must be sterilised in a hospital or some institution of similar standing , there is no similar regulation about men, but the operation must be undertaken by a qualified practitioner There is no appeal from the decision of the medical council except on a negative verdict, and permission to sterilise becomes invalid if the operation is not carried out within a year of application Those eligible to apply for sterilisation are the patient , the guardian of those under age , the husband or wife , the poor-law authority for those under poor-law care , the child-welfare authority for children under their care , the doctor in charge, or the superintendent in the case of hospital outpatients or inpatients , various doctors employed by the state Any doctor who learns, from the local authority or otherwise, of a case requiring sterilisation is required to see that the application is made and the operation carried out Doctors at mental hospitals are instructed to apply for permission to sterilise all patients for whom the operation is thought desirable before discharging them or boarding them out Where the operation is not carried out the reasons must be stated on the case-sheet In the case of mental patients not in institutions, state practitioners on learning of a case are required to apply for sterilisation, if it is needed, and see that it is carried out

It is thought that sterilisation of mental defectives cannot be effectively extended until there is legislation compelling all educable mentally defective children to attend special schools This would ensure that no mental defective would reach adult life unsterilised, and that no high-grade defectives—particularly women—would be discharged from institutions until the operation had been performed

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The Ministry of Food has arranged for an inquiry into the nutritive value of the meals served in the 1500 British Restaurants Analyses of the meals will be specially directed towards ascertaining their vitamin and mineral content, and how much of this is lost or destroyed by the different methods of cooking employed The inquiry is to be of a searching character and will cover a long period of time

In England Now

A Running Commentary by Peripatetic Correspondents

Ruth Benedict's book " Race and Racism " (London Routledge) left two dominant impressions on my mind that it is the sanest book I have read for a long while , and that, since every educated person ought to read it, it is a pity it costs 7*s* 6*d* I overcame a little prejudice against the word " racism " in the belief that it was probably employed deliberately to signify the false teachings of the Aryan or Nordic myth , this belief was, however, dispelled by finding on p 136 racism used with exactly the same connotation as racialism on p 137 It is a human weakness that we approve a work which says in better form what we ourselves have thought and have even tried to say It was admittedly this weakness which prompted me to approve the historical approximation of the findings of Gobineau in the early 1850's with the conclusions of Charles Darwin in 1859 , for Benedict points out how much new force Gobineau's thesis gained by Darwin's teaching of the " survival of the fittest " But this slogan, which has produced so much evil in the world today, was due to Herbert Spencer and *not* to Charles Darwin Spencer coined this phrase as Tennyson coined " Nature red in tooth and claw " but Darwin is blamed for all their implications If we might take a new slogan from Ruth Benedict we might select that in which she sums up the results to be learned from intelligence tests " Individual differences will still remain in all races, but the results indicate that any programme which proposes to increase human achievement will attain its ends by providing adequate and continued opportunity for any individual without regard to race or colour " My one criticism is concerned with this statement about primitive man " With the simplest savage equipment—no boats, no agriculture, no breeding of animals—he reached Australia and maintained himself in its punishing deserts " Man reached Australia in a primitive cultural stage, but if he came by land a vast zoological dilemma remains to be solved and the dingo has some claim to being regarded as a domestic animal As an antidote to the stupid perversions of so-called anthropological science that have provided a stimulus for evil-doing in our times, no better book than this has been written It is clear, simple and accurate Every person who claims to be educated and to be in a position to discuss the implications and origins of modern happenings should read it—and it is understandable by all

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Still in Iceland, you see, but I have now left my centrally heated flat and the flesh-pots of the town and gone into residence in half of a Nissen hut on the seashore I have no batman, so I do my own laundry (after a style) and mending, sweep out the hut, grope for coke in the remains of a dump (luckily just outside my door) and for bits of wood and paper wherever possible, lay the coke-stove fire (for it is still mighty cold in spite of sunshine), clear away and dump the ashes polish my buttons, and black my shoes—all in my " off " time To add to my difficulties, everything becomes covered and impregnated with lava dust We get lava-dust storms equivalent to the dust storms of Libya I have seen mountains for miles completely blotted out from view, and sometimes dust storms blow out to sea and interfere with air patrols The upper part of the beach here consists of rounded pebbles and chunks of lava, smooth and water-worn it is covered with the golden flowers of silverweed and with some lovely low-lying pink and blue flowers whose name I know not Lower down the beach the flat layers of lava emerge, strewn with lava blocks covered with minute periwinkle shells Eider and long-tailed ducks, redshanks, turnstones, ringed plover, sandpipers oyster-catchers and Arctic terns abound along the shore, and white wagtails, whimbrels, snipe, mallard, and Greenland wheatears nest round the camp , and one small ditch harbours three red-necked phalaropes In the last-named species the usual physiological division of labour among birds is reversed the hens are more brightly coloured than the cocks , the hens amorously pursue the *cocks , the cocks* sit on the eggs and feed the young Not much room for polygamy here, but possibly for polyandry

A fortnight ago I visited a lake, in the interior with numerous boiling springs along its edge which give off , insured population. This experience should enable them to cooperate with the administrators in producing a comprehensive and well-ordered scheme for placing the health of the people on a sound and enduring basis. The first consideration, as Disraeli said, is the health of the people.

PLANS FOR THE CHILD

At the annual general meeting of the maternity and child welfare group of the Society of Medical Officers of Health on July 3, presided over by Dr Virginia Saunders-Jacobs, the group committee presented an interim report on medical planning in which the place of maternity and child welfare work in its widest sense naturally ranked high. The report suggested that education of the public should begin with the organised teaching of parentcraft in schools and elsewhere throughout adolescence. A complete maternity and child welfare service, with ancillary services would be available for all, as part of a national salaried general medical service organised as some form of regional scheme, with the health centre as the local unit. While this is being established there should be no interruption of the progress in maternity and child welfare now being accomplished, the preventive services would develop the principle of regular and adequate medical supervision of the child up to school-leaving age until a national service was ready. Prevention and treatment of illness in children would be in the hands only of doctors with postgraduate experience of the subject. The maternity and child welfare services would be amalgamated so that one service covered the child from birth to school-leaving age.

Unlike Dr Mathilda F Menzies,[1] the committee had no doubts about the advantages of hospital over domiciliary confinement, and urged that sufficient hospital beds should be provided for all women who need or desire them. Maternity hospitals, they felt, should be separate units but attached to general hospitals. Obstetric care and confinement of the mother apart from general supervision would in all cases be carried out by a specialist obstetric service, based on the maternity hospital. There would seem to be no recognised place for the midwife in such a plan unless she is to be responsible for the "general supervision", and it is arguable that a purely specialist service, besides being expensive would inspire in the mother a belief that the bearing of children was a highly dangerous affair. (It is well to recall Uncle Toby's silencer to Dr Slop: "I wish you had seen what prodigious armies we had in Flanders.") The report also pointed out that hospital beds for women who need investigation during pregnancy are scarce at present. A minimum of 10 beds per 1000 births in an area it was suggested, are needed for antenatal purposes, in addition to hostel accommodation for expectant mothers which should be attached to maternity hospitals, especially in rural districts. Hostels and short-period residential nurseries could also be provided for the care of the children while the mother was lying-in. In discussing the report Dr Violet Russell noted that it proposed a complete service, operating through health centres, to cover preventive and curative medicine for children of all ages. It was agreed that the general practitioner would take an increasing part in this service, but it was felt that neither he nor the antenatal clinic officer of today was qualified to undertake both prevention and treatment of disease in children. The University of Aberdeen has provided as part of the curriculum for medical students courses of instruction and practical work in child welfare, under the direction of the regional medical officer for maternity and child welfare. Other medical schools may follow suit. Certainly the coming generation of doctors will be expecting to take a fuller part in social medicine, as the founding of the new chair at Oxford indicates. Maternity work, it was felt, would and should develop as a separate service from child welfare, which ought to be more closely linked with the school medical service. This would undoubtedly be sound policy, the gap between the last inspection at the infant welfare clinic and the first inspection by the school doctor has been a grief to public health workers long enough. Dr Saunders Russell pictured the health centre of the future as being staffed by a group of doctors two or three of whom would have special training and interest in the prevention and cure of disease in children.

STERILISATION LAWS IN SWEDEN

Sterilisation is controlled by law in the Scandinavian countries. In Denmark as early as 1920 Prof Christian Keller urged the government to legalise sterilisation of any abnormal person if he, or those responsible for him, applied for it and the first sterilisation law was passed in 1929. In 1935 this was replaced by a new law under which even psychically normal people could not be sterilised except with the consent of the Minister of Justice, he can authorise the operation, on the advice of medico-legal authorities, if there is risk of transmission of hereditary disease. In Norway a law passed in 1934 gives to the medical director only the power to consent to operation where the application is made on sufficient grounds. In Finland, in 1921, the authorities finding that defectives were often sterilised before discharge from institutions took steps to legalise the practice and under the law of 1935 anyone capable of judgment may be sterilised with the consent of the medical council if there is risk of defective offspring. It can also grant permission in the case of those who owing to some psychical abnormality, might commit a sexual crime, when the treatment implied is castration. Prof Alfred Petrén[1] tells how, as inspector of the Swedish board for mental disease, and a member of parliament, he helped to establish a committee of experts in 1929 who studied the problem and advised that sterilisation should only be practised on those capable of understanding what was being done and of giving their consent. Those who lack this degree of capacity, they argued, are nearly always segregated in institutions. However, the need for institutional care does not necessarily go hand in hand with mental capacity. Thus high-grade mental defectives with uncontrolled sexual habits may need segregation whether they are sterilised or not, whereas many low grade easy-tempered defectives who can well be managed at home need sterilisation because they may be persuaded into sexual promiscuity though they have no particular inclination to it. Many Swedish doctors urged that sterilisation should be permitted on social and eugenic grounds, though not on social grounds alone, and the medical council was of the opinion that the chronically insane and mentally defective should be sterilised because they were incapable of looking after children if they had them. After much debate, the proposals came to nothing, but in 1933 Professor Petrén opened the question again, and new proposals, drawn up by Prof R Bergendal, professor of criminal law at Lund University, came under consideration. He took the view that responsible defectives could be voluntarily sterilised without further legislation provided there were adequate criminal, political, humanitarian, social or eugenic reasons for the operation. It was generally felt, however, that such voluntary sterilisation could not be left quite unregulated in this way. In 1934 a law was passed regulating the sterilisation of mental defectives who were too low-grade to give valid consent to the operation, it was provisionally agreed that surgeons who were asked to sterilise such patients should send reports on the cases to the medical council, which would make the final decision, a patient could be sterilised without permission of the medical council if two qualified practitioners deemed it advisable, and if the patient or those responsible for him gave consent in writing. In such a case a full report had to be made to the council. Meanwhile proposals for regulating the voluntary sterilisation of those defectives competent to give consent—to whom the law did not apply—were under consideration, and as an interim measure surgeons were required to send a full report to the medical council of all such cases which they undertook. This was to give the council some idea of how often, and on what grounds, those operations were being done.

The Swedish population commission, which later reported on the results of the 1934 sterilisation law, urged that the sterilisation of people capable of making a judgment (normal people as well as defectives) should be regulated, and pointed out that

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[1] See *Lancet* July 11 p 35

[1] *Nord med* 1942 13, 345

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M P

WE were occupied last week in debating production and (in secret) shipping. Behind both of these debates looms the question of food-supply the first necessity of production and its relation to shipping space available for munitions of war or the transport of armed forces overseas. Lord Woolton informed the Upper House that we are spending £127 000 000 a year in subsidising foodstuffs an expenditure which has largely contributed to stabilising the cost of living. As a result not only are prices kept within bounds but because of the control and direction exercised foods are in very good supply. The question the nation will have to ask itself. as the intensity of the war effort increases is how far we can limit our imports of food and how far we can increase our home-grown food-supplies

Reserves of food in this country are good · some foods such as tea we are even exporting. The milk situation is good and the extension of the milk-in-schools scheme and of the supply of school dinners go a long way to meet the obligation of child nutrition. All schools supplying meals not only those under the local education authority are to have extra rations. The rise in liquid milk consumption during the war deserves more attention than it has received. In 1941 there were 202 million gallons more milk consumed than in 1939 an increase of nearly 25%. As milk rationing has been suspended during the summer no doubt the figures are now still higher. Potatoes are so abundant that there were complaints in the House of waste of last year's supplies (which had been held as reserve against the possible shortage before this year s crop matures) one member suggesting shooting those responsible and another shooting those who would not eat them. A brisk but brief potato war on the Conservative back benches (Casualties nil) What the effect of the new restrictions on poultry foods will be on the egg supply next year is problematic. It may have very little effect if small poultry keepers learn to use kitchen waste more effectively. Fruit and green vegetables are in ample production but perhaps need better distribution. The country is habituated to the meat ration and doing so well on it that one wonders if a great deal of prewar meat consumption was not just waste. The grain harvest is yet to be got in but prospects are good (and if nothing worse happens to our bread than the addition of a little rye, as the Minister of Agriculture proposes we shall have little of which to complain

If 1942 is to be the year of the Second Front then our home population seem assured of good food-supplies. One trusts that Major Lloyd George, who only recently left the Food Ministry to become Minister of Fuel and Power and wrestle with our tough fuel problems, will be as successful in his new sphere as he was in his old. In the spheres of armament production of all kinds of food and of fuel we are facing problems of adaptation of planning and of careful contriving—we are not facing problems of dearth and insufficiency of materials. If we tighten our belts it is to create reserves for the still bigger efforts that lie ahead of us

FROM THE PRESS GALLERY

Education after the War

EDUCATION is important to every nation but most of all to a free country for, as Earl DE LA WARR pointed out in the debate in the Lords on July 15 of all forms of government the most dangerous is an uneducated democracy. Lord SAMUEL in his wise opening speech pled for the extension of education in length breadth and depth. We should take in children under five and give part-time education to our young people over fourteen. He pointed out how much physical training school medical services the distribution of milk and the provision of meals have done for the health of the nation as a whole. Lord NATHAN said we must prepare now to cope with what would be an urgent post-armistice problem. After the cease-fire the nation would be in a ferment of confused emotions families would be reassembling and in urban areas many schools had been destroyed. Above all we should provide educational rehabilitation for the young people who had had to postpone their higher education on account of the war. Army life impaired the habit of intellectual application and it would not be easy for them to return to their studies. He thought they should not be demobilised at once but should continue on service pay and be seconded from their units for refresher courses. Of their natural quality there was no doubt , it was up to us to give them the education that would burnish that quality into competence. Lord SOULBURY welcomed the extension of education for it would give us an opportunity to fill two important gaps in our health service—the under-fives and the fourteen-to-eighteens. The Ministry of Health has power to set up infant-welfare centres but parents have not always taken advantage of these facilities. Education authorities are only responsible for the medical inspection of children attending school. Before the war there were about a million and a half children in the 2–5 age-group. Of these only a seventh—mostly over 4—attended nursery schools and were eligible for the medical care provided by the education authorities. War-time nurseries had improved the situation but they were necessarily an improvisation and as such were—he thought probably rightly—administered by the maternity and child-welfare authorities" But he was not sure this arrangement was a suitable permanent solution. Later he would like to see the care and training of these children given over to the educational authorities. who would assume responsibility for the medical inspection of all children over 2 whether they were attending school or not. Before the war many school entrants were found to have defects which should have been discovered and treated earlier. Lord SELBORNE in his reply showed that the Government is mindful of these breaches in our health defences, for he said that a potent argument in favour of part-time compulsory education for adolescents was that it would enable us to supervise the physical health of young men and women up to 19

QUESTION TIME

Workmen's Compensation Payments

Replying to a question Mr H MORRISON said I have recently had under consideration representations made by the Trade Union Congress general council in regard to benefits, but as a Government committee are undertaking a comprehensive survey of the social insurance and allied services including workmen s compensation, I have come to the conclusion that legislation proposing substantial amendments of the existing scheme could not usefully be considered pending the report of that committee which is expected within the next few months. Payments under the act in disablement cases were substantially increased two years ago by the Workmen s Compensation (Supplementary Allowances) Act 1940

Army Doctors and Civilian Cases

Mr D SANDYS informed Mr I C HANNAH that Army medical officers may where necessary assist civilian doctors so long as this does not interfere with their military duties. Many medical officers have been granted temporary release from the Army to meet civilian needs —Dr E SUMMERSKILL Does this apply only to specialists ?—Mr SANDYS It does not

Appointment of Refugee Doctor

Sir HENRY MORRIS-JONES asked the Minister of Health whether sanction had yet been given by his department to an application made six weeks ago on behalf of a distinguished Czechoslovakian doctor of unimpeachable references who was a recognised authority on rheumatism to take up an appointment offered him by a group of collieries in the Midlands to coöperate with their own medical officers in a clinic for the prevention and treatment of rheumatism and allied disease amongst miners —Mr E BROWN replied. The colliery clinic has been approved as an institution at which a foreign-qualified doctor may be employed under the Medical Register (Temporary Registration) Order. My approval was given as soon as certain questions of principle regarding the employment of foreign doctors in this new field of industrial medicine had been settled in consultation with the Government departments concerned and the Central Medical War Committee

Refugee Dentists

Mr T E. HARVEY asked the Minister whether his attention had been called to the increasing need for qualified dentists sulphur-impregnated fumes Over one spring is a wooden hut, divided into two compartments, probably male and female, to provide steam baths locally esteemed (no pun intended) in the treatment of skin and chest diseases Thoroughly sweaty and choked with sulphur fumes one dashes into the icy lake for a swim and then runs to a dressing-room and gymnasium belonging to a large modern high-school, which is used in summer (April to September) as a hostel for visitors (there is no schooling in summer in Iceland—most of the older children go to the country to help in farmwork) This year the sleeping accommodation is occupied by mothers and small children evacuated from Reykjavik, but visitors can still get meals at the hostel, which is centrally heated by steam collected from one of the geysers by the lakeside A supply of hot water is provided by bringing cold water, from a mountain a mile away, in a pipe to the geyser, where it circulates in an enormous submerged radiator, whence it is conveyed piping hot to the hostel (The water from the geyser itself cannot be used because of the sulphur in it) A hut built over another hot spring is a laundry , another a forcing-house for tomatoes and cucumbers What look like children's sand-castles at the lakeside are cones of hot sand used for baking bread The loaf is placed in a hermetically sealed tin, wrapped in a sack, and buried for twenty-four hours Another spring, with a pleasantly warm temperature of about 80° F , is a semi-sacred spot, being where recalcitrant heathen were chucked in for immersion baptism at the forcible "conversion" of Iceland to Christianity centuries ago They had refused baptism elsewhere on the plea that the water was too cold Alongside are several small boulders on which was washed and prepared for burial the body of a famous assassinated Icelandic bishop The site measures only a few square yards and is enclosed by a small turf wall There is no inscription to enlighten the visitor In England one would expect, in such a place, paths, railings, notices, photographs on postcards, ice-cream stalls, vendors of descriptive pamphlets I prefer the Icelandic way

After luncheon, consisting of soup, a mutton broth containing *points d'asperge*, followed by stuffed meat served with jam and potatoes and by stewed rhubarb and lashings of cream and rounded off by excellent coffee with yet more cream, we sunbathed on the mountainside among profuse birch-scrub, the haunt of innumerable meadow-pipits, redwings, snipe, and a few Greenland redpolls Higher up the mountain, above the birch-scrub the ground was covered with many different kinds of saxifrages and other rock-plants , orchises , butterworts (with their greasy fly-catching leaves) , heaths of different sorts, including one with a solitary-white bell at the end of a four-inch stem , bilberries , and wineberries, like miniature crab-apples At seven o'clock we returned to the hostel for supper and found several tables set out in a long line down the centre of the hall and covered with hors d'œuvres Everybody—guests, evacuated mothers and children old enough—took a plate and a fork and helped himself to whatever took his fancy among slabs of cheese, smoked saithe (a sort of salmon), smoked herring, herring soused in wine-sauce, cucumber, pickles, potato salad, Russian salad, Icelandic salad (covered with a beetroot-pink sauce), white bread rye bread, ewe-milk butter and so on This was followed by a hot dish of white fish, potatoes and rice, and by a sweet and coffee Half an hour later we went "back to base" in a 'bus—a 50-mile run over a dizzy mountain-pass with splendid views of Mt Hekla, several glaciers, and the Western Isles (named after the original Irish settlers found already there by the first Norwegian settlers)

* * *

Fancying myself at dental gases, I conveyed tactfully to the dentist of our internment camp that I intended to take an active part in future extractions of those unfortunate enough to be my patients The dentist, no doubt reminding himself that there was a war on, agreed with a charm and alacrity that did him and his inhibitions great credit , and a couple of mornings later found me hurrying up the stairs of the erstwhile boarding-house that now masquerades as an emergency clinic The dentist, through either modesty or inability to sway the great ones who control our destiny, inhabits an eyrie on the top floor which in prewar days probably served as a box-room , and as I force myself in at the door I cannot help wondering how it will settle down to that hu occupation again after the bloody and exciting con it has witnessed in the last two years These wh reflections, however, are lost in the difficulties of clea a passage through a vast throng But on achieving Mecca, the dental chair, I realise that while six p may constitute a record in dental assistance, it is their compression in a room 8 ft by 8 ft that give massed effect First—and indispensable—is the de himself , then there are two foreign dentists who him regularly and can hardly be banished when unknown quantity—myself—may be about to kill of their compatriots They both bow stiffly fro waist, imperilling a tray of forceps on the window The other two occupants of the room are the den receptionist-nurse, who is keeping an eye on his inte and the outpatient sister who has just popped up downstairs to keep an eye on mine

Zero hour coincides with my arrival, and sister flatten ourselves in corners as the first barrage of effic is put over Glassy eyed, I watch X and Y, the foreign exponents of the art, darting about, turnin bunsen burners and flaming things in lakes of s From the wash basin, where he is scrubbing up w fine disregard of the soap ration, the dentist speak a manual of hygiene Impressed, sister and I view other over their milling heads and being an easy to propaganda, I remain awed until a cynical gleam i eye punctures my credulity Would the devote hygiene so often meet head on if this were no routine ? Did not Y make an involuntary moveme pick up a fallen swab, before kicking it, with an conscious rectitude, into a corner ? Does not X vie gauge on the steriliser with undue anxiety ? Fr they and their English overlord go into a huddle nea wash-basin, and sister and I listen to a serious and voiced discussion on procedure The gag, nearly b to pieces, is transferred to a kidney dish "Better it," advises the dentist in crisp tones, and watches simple pride as Y holds it under the hot tap Mean X proceeds to dish up the contents of the steriliser, uneasy about the drum of swabs (the presence of w is never explained) puts them to air on the window l with the lid open Half of them are removed by sea before he can get the window up again A happy d sion is caused by the entry of the patient The do locked and the stage set for the final drama I inflat bag, making encouraging noises, and try to listen t patient's respirations, but his breathing—if he is breathing—is lost in the roar of the steriliser which turned full on again, perhaps as a symbol of his agitation The forceps gleam, and we sway rhythm to avoid the hail of teeth that patter on the floor three four five That's the lot The ist straightens himself We all smile at each c conscious that we have acquitted ourselves well

At this moment the patient begins to scream lo and is only induced to stop and open his eyes by the ministrations of sister with a water-soaked swab smile fades from the faces of the two aliens, who r me with liquid, accusing eyes till I am vindicated b patient Rising, he shakes me warmly by the hand says "I 'ave never 'ad one such nice time before— I inquire fretfully why he screamed if he enjoyed hi so much "Always do I do this," he replies, sm brightly "Yes Cheerio !" He shoulders his out of the room, and international confidence is rest We wait for the next patient He does not come He never comes, having faded away on the first not his fellow countryman's halloo

* * *

When one deals with flying personnel one accep inevitable the multiple forms provided to keep records of their health These papers travel abou world from station to station making plenty of cle work It is apparently not done, in the Services, su to send only the forms one must add a formic covering note explaining one's reason for sen them for example "Retention" or "Re-forwardi I have often puzzled as to why copies of these docum come to anchor where they do, and I can sympat with the unfortunate who recently sent us a cove chit which read "Reason for forwarding documen Not Known"

TOTAL *versus* SUBTOTAL HYSTERECTOMY

SIR,—Your leader of July 11 on hysterectomy ignores he most essential point—the function of the cervix. know of no intrapelvic pathological condition which will produce carcinoma of the cervix, so that total hysterectomy should be performed only on those cases where carcinoma is evident or strongly suspected. To emove the cervix for leucorrhœa or any other symptom of endocervicitis is to remove the nose because of rhinorrhœa. This analogy goes deeper than is apparent, since to remove the nose completely would be to abolish the sense of smell. To ablate the cervix is to destroy its function, a particularly important one in the life of a woman, of lubricating the vagina during coitus, and of producing the secretions which materialise the female orgasm. To remove the cervix is to end the sexual life of the woman. In many cases this is a greater tragedy than a cervical carcinoma. I once had a colleague who performed total hysterectomies as a routine, and to review his cases over a number of years was to meet many cases of marital unhappiness and personal misery. Too often I had to listen to the comment: "I wish I were dead, doctor." Surgical practice has too long tended to overlook happiness in its search to restore health.

Bridgwater M. P. REDDINGTON.

SIR,—Your leader describes the attempt made by McKinnon and Counseller to assess the relative advantages of total and subtotal hysterectomy from the case records of 2684 operations performed at the Mayo Clinic. In my opinion the figures in the original article do not bear out the interpretation put upon them. Your statement that "this is a formidable array of material, large enough to reduce the statistical error to a minimum" contains the unwarranted assumption that the value of an investigation is in direct proportion to the size of sample of the community tested, independent of bias. Even in a series of 2684 hysterectomies, there are many upsetting factors—such as age, parity, weight, skill of the surgeon, anæsthetic, and especially technical difficulty during the operation—any or all of which may have heavily increased the bias against one or other type of operation. The subdivision of the whole series into two grades, good and bad operative risks, does not eliminate possible bias, especially as the criteria for including cases in one or the other grade are not given. The statement "in the group of good surgical material the type of operation was the only known variable" is therefore open to criticism.

The conclusion has been reached that "the elimination of the cervix as a source of subsequent trouble and the lower immediate mortality-rate of the total operation far outweigh the risks of any complication that may arise after total hysterectomy." This is based on the evidence of the two following tables:—

TABLE I—DIFFERENCE IN MORTALITY RATES: ENTIRE GROUP

Procedure	Cases	Hospital deaths	Per cent.
Total hysterectomy	1920	15	0.78
Subtotal hysterectomy	764	8	1.04

TABLE II—DIFFERENCE IN MORTALITY RATES: CASES OF LEAST RISK

Procedure	Cases	Hospital deaths	Per cent
Total hysterectomy	1034	2	0.18
Subtotal hysterectomy	463	4	0.86

During the preparation of the second table 1187 cases have been discarded because they do not fit into the group of "cases of least risk." When the mortality figures for these 1187 cases—presumably of "greater risk"—are worked out, as can be done after subtracting the relevant figures in tables I and II, it is seen that the percentage death-rate is higher following total than subtotal hysterectomy.

TABLE III—DIFFERENCE IN MORTALITY RATES: CASES OF GREATER RISK

Procedure	Cases	Hospital deaths	Per cent
Total hysterectomy	886	13	1.47
Subtotal hysterectomy	301	4	1.33

Thus, by using the same methods as the authors', there is in nearly half the total cases a higher mortality associated with the total operation than with the lesser procedure. The original figures, therefore, might almost as well have been used to show that the total operation was more dangerous than the subtotal operation.

In conclusion, however, it must be emphasised that the differences in the mortality-rates after total and subtotal hysterectomy in all three tables are not statistically significant. For example, in McKinnon and Counseller's first table, assuming an identical risk for each operation, the same or a greater difference in mortality-rate would be expected to occur by chance in at least 50 per cent. of similar samples. No conclusions as to the relative risks of the two operations can therefore be drawn from the figures available. It seems a pity that the blessing of THE LANCET should have been given to statistics of such questionable value.

Nuffield Department of Obstetrics and Gynæcology, Oxford. C. SCOTT RUSSELL.

EPIDEMIOLOGY OF JUVENILE RHEUMATISM

SIR,—In their interesting paper Dr. Morris and Mr. Titmuss write (p. 62): "The concept of a 'rheumatic stratum' (Miller 1926), excluding the well-to-do on the one hand and the very poor on the other, received no confirmation." This bald statement may be taken to imply that I have regarded the very poor as enjoying a freedom from the disease comparable to that of the well-to-do. Certainly I have never held nor intended to express such an opinion. The class incidence of juvenile rheumatism shows that it is peculiarly limited to the children of the poor, but that in them it is commoner in the upper and middle-class poor than in the very poor and destitute. This second point has been demonstrated by many investigators, and in particular it has been found that overcrowding is not a predominant factor in the mass-production of the disease. This, I note, has been shown once again by the present authors. This fact, as you, Sir, comment in your leader, is against the hypothesis that the disease is commonly transmitted from case to case by droplet infection, a view totally opposed to clinical tradition. Any infective disease powerfully influenced by environmental factors is bound to show some evidence compatible with the possibility of case-to-case transmission, but it is not easy to imagine stronger evidence against such a hypothesis than the absence of overcrowding as a paramount factor in its large-scale production.

Basingstoke. REGINALD MILLER.

THIRD GENERATION SYPHILIS

SIR,—Medicine never has been and probably never will be an exact science; but many of its phenomena observed over a long period give grounds for deductions which are legitimate, and probably even correct, without being susceptible of scientific proof. Among such phenomena I would venture to place the transmission of syphilis from an untreated congenital mother to her offspring. Mr. Johnston Abraham says that he has never been able to satisfy himself that the evidence adduced in support of this contention is scientific. In a paper based on my presidential address to the Medical Society for the Study of Venereal Diseases (1933), I gave records of 16 families with syphilis in three generations, and of 6 in which syphilis was probably and 7 in which it was possibly present in the third generation. I concluded that an untreated congenitally syphilitic mother might transmit florid congenital syphilis to her child even though her husband was healthy; but was careful to add that this conclusion was lacking in scientific proof. Since then several similar cases have come to my notice. Many problems connected with congenital syphilis await solution. Why, for example, in a mixture advocated ? Is the ferric chloride designed as an astringent, and if so where is it expected to act, or is it considered as a means of administering iron for anæmia, in which case the form is unsuitable and the dosage inadequate, or is it just a "tonic" ?

Tabella codeinæ composita (NWF, p 55), which is equivalent to 'Veganin,' contains gr ⅛ of codeine phosphate, which is an expensive substance How much does such a dose contribute to the total analgesic action and what would happen if it were omitted and the doses of aspirin and phenacetin were increased ?

These examples could be readily multiplied The criterion for inclusion of a drug in a prescription should be convincing positive evidence in its favour, and if none exists it should be excluded, a policy which might provide valuable information on the effectiveness (or otherwise) of doubtful drugs A distinction should be made wherever possible between the pharmacological and the psychological actions of drugs, and the number of drugs employed for both purposes, particularly the latter, should be reduced to a minimum, which has certainly not been reached in the NWF

I believe that the medical profession generally desires the elimination of the bottle-of-medicine habit Now, when restrictions of all kinds are willingly accepted by the public, is surely a suitable moment to reduce both the number and quantities of useless and doubtful drugs employed, in the interests of national economy and of clarity of therapeutic purpose The aim should be to set up a formulary containing a small number of drugs with clearly demonstrated actions, a few substances necessary for pharmaceutical reasons, and a few flavouring agents A few cheap, harmless substances should perhaps be included for psychotherapeutic purposes Such a formulary, desirable for peace as well as war, would help to establish more rational therapy

Middlesex Hospital Medical School C A KEELE

A GOOD GESTURE

SIR,—The China Medical Aid Committee appeals again to your readers to assist the National Red Cross Society of China In the past these appeals have been generously answered and now that China is our ally in name as well as in deed we put forward our appeal with even more confidence Three years ago nineteen medical men, who had been rescued from concentration camps in the south of France at the end of the Spanish War, were sent to help the Chinese Red Cross who had asked urgently for trained medical men as well as supplies This committee in cooperation with a Norwegian committee, financed and equipped these doctors and provided their maintenance so that the slender resources of the Chinese Red Cross should not be drawn upon The help of the Norwegian committee ceased in 1940 and we are the only body to which these doctors can look for support The doctors are working on various sectors of China's immense war front and two have been in the thick of the Changhsa battles All of them are doing invaluable medical and surgical work, and when they have time they organise first-aid training and teach hygiene to soldiers and civilians They lead the simplest and hardest of lives The following report, written by a young English doctor, is typical of work in south and central China

Our unit had charge of a hundred beds in the hospital, which was otherwise run by the military But the latter had neither the equipment nor the personnel to cope with the more serious cases, and these all came to us Most of the cases we had were very severe compound fractures and chest wounds that had survived the first week or so The abdominal and brain cases we saw little of, they had died before they could be brought to us But the fractures were bad enough They had come in carried on makeshift stretchers Exhausted with pain, their wounds covered with pus soaked dressings, dirt stained, and with appalling deformities through lack of proper splinting, they presented a sorry picture indeed

The Chinese Red Cross has a task so enormous to carry out that the aid we give seems ridiculously small but it is an earnest of our appreciation of the heroic resistance maintained by China and we appeal to you to continue that help for another year Donations should be sent to Dr E R C Hambly, Treharrock, Seer Green, Bucks

China Medical Aid Committee MILLAIS CULPIN, Chairman

REACTIONS TO THE REPORT

SIR —After hearing the report discussed at a meeting of medical men one is amazed at its good reception hitherto The sentiments stated to have inspired it are of the best, and the public press has in few cases looked further , but the measures proposed for translating these sentiments into action indicate that the authors attach no weight to the outlook of the political parties which will determine our future It is not clear that the public has anything to gain by accepting this report, or that its authors realised what the public needs and is likely to demand May I suggest an acid test by which this or any other report may be judged ? One outstanding feature of our present organisation is that independent competitive practice fails to provide a sufficient number of doctors in industrial areas As a result the people of those areas get only such attention, especially in winter, as can be given by a doctor almost too tired to sign certificates and utterly incapable of listening patiently to a series of medical histories We all know that from our own point of view this is an economic problem But from the public point of view it is a health problem for which neither general practitioners, nor clinics, nor health visitors have provided a solution Here then is the test does the Interim Report, or any other report provide a machinery which will bring to industrial areas the numbers of doctors needed ? There is little if anything in the report to suggest that the question has even been considered It seems to have been written by gentlemen wearing professional blinkers which have entirely shut out the public interest and forced them to concentrate on their own I have read various other reports but can truthfully say that what the BMA calls "the achievement of positive health" is given first place only in that drawn up by the Medical Practitioners Union

Sevenoaks GORDON WARD

PREPARATION OF INTRAVENOUS FLUIDS

SIR,—Your leader of June 27 and a letter by Mutch in your issue of July 4 draw attention to the advantages attending the medicinal use of charcoal Lees and Levvy (*Brit med J* 1940, i, 430) noted its use as an adsorber of pyrogenic substances, rendering unnecessary the distillation of water for preparing intravenous *infusion fluids in an emergency* We *emphasised* previously (*Pharmaceut J* 1941, 146, 258) the importance of adding charcoal to the solutions of the medicaments in distilled water as these frequently acquired pyrogenic properties during manufacture We have encountered certain disadvantages associated with the use of charcoal for this purpose, and as we have been consulted on several occasions regarding opalescence occurring in infusion fluids after the use of activated charcoal our experience may be helpful to those engaged in the preparation of infusion fluids

Activated charcoal is normally prepared by one of the following methods

(*a*) Direct method —Carbonisation then activation

(*b*) Briquette method —Material (anthracite, coal, wood, &c) briquetted under pressure then carbonised and activated

(*c*) Chemical method —Impregnation of material with a variety of substances, such as chlorides of zinc, calcium or magnesium, alkalis, alkali carbonates, sulphates or bisulphates, sulphuric and phosphoric acids, and carbonised at relatively low temperatures This carbon requires little subsequent activation

In the preparation of saline infusion fluids using charcoal as adsorbent, an opalescent solution is produced on autoclaving under certain conditions This we found to be due to chemical impurities derived from the charcoal The remedy lies either in the use of charcoals prepared by methods (*a*) or (*b*), or in using charcoals prepared by method (c) which has been thoroughly washed to remove all soluble matter It is difficult to determine the method of manufacture of a sample and the BP contains no monograph and standards for activated charcoal, but we found that a suitable charcoal was one which complied with the limit tests and adsorptive-power tests of the United States Pharmacopœia XI, under "Carbo Activatus"

Royal Technical College School of Pharmacy, Glasgow JAMES P TODD, D H

Public Health

Smallpox in Glasgow

As already emphasised in this column a fortnight ago (p 55) the cases fall into two groups (a) those directly associated with the ship which arrived from Bombay on May 29, and (b) those which subsequently made their appearance in the general population Of the cases associated with the ship the first was an electrical engineer, a member of the crew, whose rash appeared on May 23/24 on shipboard and who died on June 2 of confluent smallpox Following a complete medical examination, vaccination or revaccination of all persons on board, the passengers were allowed to proceed to their destinations while the crew remained on shipboard under surveillance some proceeding on temporary leave and others being paid off Subsequently, seven members of the crew, none of whom had been previously vaccinated until May 29, contracted smallpox, all being modified cases with the exception of one who was removed to hospital on June 10 and died on the 15th Two passengers contracted smallpox, the first being a Polish officer who went to a billet near Glasgow, he had been vaccinated in infancy, at 7 and 21 years and again successfully on May 29, his attack being extremely modified The second was a baby who developed smallpox at Swindon, this baby had been vaccinated on May 29 but unsuccessfully One of the medical officers of the Department, who took part in the inspection and vaccination on shipboard, also developed a moderately severe attack He had been vaccinated in infancy and on May 29 unsuccessfully There were thus in all eleven cases connected with the ship, ten being infected from the original case

The second group of cases has occurred in the city population, but in spite of the most rigorous inquiry no connexion has been discovered associating these cases with the ship or with one another The cases which have so far occurred, numbering 25 in all consist of 19 primary and 6 secondary infections The dates of diagnosis and admission to hospital of the first nineteen cases are as follows 26th June 1, 27th June 4, 28th June 3, 29th June 5, 30th June 1, 1st July 2, 2nd July 1, 3rd July 1, 6th July 1 The six secondary cases were admitted to hospital as follows 8th July 1, 9th July 2 10th July 3, two of these cases, however are considered to be doubtful infections Four of the city cases have died in hospital, a woman of 31 a man of 72, a woman of 65 and a woman of 20 who was admitted from a neighbouring town but who received her infection in Glasgow

The original 19 cases occurred at widespread addresses in the East and North of the city but none of them in the dock area The cases themselves have varied between the typical virulent Asiatic type of smallpox and infections so modified as to be difficult to diagnose As each case occurred the immediate contacts were removed to one of the fever hospitals which had been converted into a reception house while vaccination was carried out in the immediate vicinity

Up to June 26 the incidence of smallpox was confined to the crew living on board the vessel When it was found that cases were making their appearance in the city itself, a more serious view was taken of the situation By the morning of Sunday 28th June five patients had been admitted to hospital, one on Friday 26th and four on Saturday 27th On the Sunday during which day three further cases were admitted, it was decided to make arrangements for the general vaccination of the population Arrangements to open twenty-five vaccination centres in schools were made, the staff assembled, the lymph obtained, the forms prepared, the posters and advertisements got ready and the newspapers informed, the centres commencing work on Wednesday morning, July 1

Medical practitioners had already received a letter of June 14 advising them of the occurrence of smallpox among the crew of the ship and requesting them to report any suspicious case in their practices On Sunday, June 28, their cooperation was requested and they were informed of the availability of lymph, the method of vaccination recommended, and the opening of the vaccination centres This was followed on June 30 by a further letter offering a fee of 2*s* 6*d* for each person vaccinated (with the exception of insured persons)

Sir Alexander Macgregor acknowledges his debt to the newspapers for the publicity given to the vaccination scheme On the first day the centres were open nearly 34,000 persons were vaccinated, on the second and third days the number vaccinated on each day was over 55,000 During the first week 282,258 vaccinations were carried out, and up to date (July 16) 375,339 persons have been vaccinated through the centres Returns of persons vaccinated by medical practitioners, at factories, etc, are not yet available but an estimate based on the lymph issued indicates that somewhere about half a million of the population have submitted themselves to vaccination This campaign was thus highly successful One of the results was to give rise to an abundance of vaccinal rashes, some of which were difficult to distinguish from true modified smallpox, and a number of patients were admitted to hospital for observation

It will be observed from this account that the infection in the city began with a group of severe cases, but that subsequent infections have become much less severe and that the more recent admissions to hospital have been known contacts of the original group In these circumstances, the outlook may be regarded as hopeful, although of course there is always the possibility of some unrecognised case continuing to spread the infection, as happened frequently in the 1920 outbreak in the city

Smallpox in Liverpool

A mild discrete case of smallpox was recently reported at Liverpool The patient was a serviceman, returning from Canada after training who reported sick as soon as he joined the ship and was immediately isolated By the time he reached Liverpool he was already convalescent, but he was taken to the isolation hospital until he should have completely recovered All on board the ship were vaccinated and there is no reason to think there will be any secondary cases This case had of course no connexion with the Glasgow outbreak

Infectious Disease in England and Wales

WEEK ENDED JULY 11

Notifications —The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever, 1297, whooping-cough, 1390 diphtheria, 768, paratyphoid, 8, typhoid, 4, measles (excluding rubella), 7361, pneumonia (primary or influenzal) 625; puerperal pyrexia, 182, cerebrospinal fever, 87, poliomyelitis, 5, encephalitis lethargica, 3, dysentery, 155, ophthalmia neonatorum, 106 No case of cholera, plague or typhus fever was notified during the week.

Deaths —In 126 great towns there were no deaths from scarlet fever, 1 (0) from an enteric fever, 4 (1) from measles, 3 (0) from whooping-cough, 13 (1) from diphtheria, 45 (5) from diarrhœa and enteritis under two years, and 9 (2) from influenza The figures in parentheses are those for London itself

Manchester reported the fatal case of enteric fever There were 5 deaths from diarrhœa at Birmingham

The number of stillbirths notified during the week was 215 (corresponding to a rate of 34 per thousand total births), including 19 in London

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Postgraduate Lectures in Edinburgh —The following Honyman Gillespie lectures will be given at the Royal Infirmary, Edinburgh, on Thursdays at 4.30 P M, during the summer vacation July 30, Dr Andrew Davidson (the contribution of the EMS to medicine and surgery in Scotland), Aug 27, Prof T J Mackie (air-borne infection), Sept 10, Mr T M Millar (perirectal suppuration), Sept 17, Dr Charles Cameron (differential diagnosis of the chronic affections of the lungs), and Sept 24, Mr R L Stirling (sciatica from an orthopædic point of view) The lectures are open to graduates and senior students

Lectures in Ophthalmology at Glasgow — The following lectures will be given in the department of ophthalmology of the University of Glasgow in the autumn Sept 9, Prof W J B Riddell, retinal function, Sept 16, Dr Paul Bacsich, comparative anatomy of the retina, Sept 23, Prof O Loewenstein, PH D, lipoidal changes in the retina, Sept 30, Prof A J Ballantyne, pathology of the retinal veins, and Oct 1 and 2, Mr Eugene Wolff, histology of the retina syphilitic family may alternate syphilitic and healthy children be born? Why may one twin be healthy, the other syphilitic, even in the case of identical twins? Why do the symptoms of the disease vary so much even among the children of the same family? Why do some children respond rapidly to treatment while others need to be treated for three or four years? One explanation may be that some of these cases are not congenital but, as Mr Abraham calls them, "natal" cases. This could only be determined by careful and repeated physical, radiological and serological examinations of the offspring of a syphilitic mother from the time of its birth onwards. These problems, however, would have little more than academic interest if child syphilis—whether congenital or natal—was prevented, *as it can be*, by testing every expectant mother early in her pregnancy and treating those with a positive Wassermann reaction for as long as possible during the pregnancy.

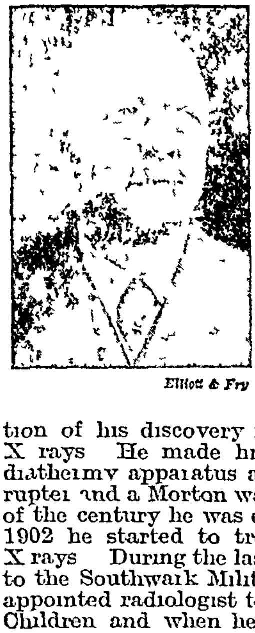
Leatherhead DAVID NABARRO

Obituary

GEORGE BECKETT BATTEN

M D EDIN, F F R, D M R E

Dr G B Batten was the doyen of British radiologists and until shortly before his death on July 9 at the age of 81 was still in practice. He once described himself as a general practitioner interested in radiology and electrotherapy and in many ways he remained a typical family doctor, refusing to reduce the personality of a patient to something to be seen under the X ray.


Elliott & Fry

Batten was born in India, the son of Joseph Hallett Batten, commissioner of Kumoun, and educated at Haileybury College and Edinburgh University, where he qualified in 1881. After holding resident appointments in Scotland he came to Dulwich in 1888 to join John Rand, FRCS, in practice, and when he died he was senior partner of the same firm. Batten had always been interested in electricity. At Haileybury he had made a telephone and within a year of Rontgen's publication of his discovery in 1895 he had begun work with X rays. He made his own coils, high-frequency and diathermy apparatus and also invented a dipping interrupter and a Morton wave apparatus. At the beginning of the century he was experimenting in epilation and in 1902 he started to treat ringworm of the scalp with X rays. During the last war Dr Batten was radiologist to the Southwark Military Hospital and in 1919 he was appointed radiologist to the South Eastern Hospital for Children and when he retired in 1939 he continued to carry on there with civil defence work. His own craft readily recognised his worth and in 1918 as president of the Rontgen Society he described his electrical memories and anticipations. Later he became a foundation fellow of the Faculty of Radiologists.

George Batten was a big man with a large heart and a strong voice. He talked a lot but always had something to say. In his youth he was a great athlete. An enthusiastic swimmer, he played rugby for Haileybury, Edinburgh University and Devonshire. He was an expert on the old penny-farthing and later on a more modern machine won championships in the West of England and in Scotland. He reported his medical reactions to the subject in an article on cycling and perineal pressure to our columns in 1882. As he grew older football and cycling gave way to golf and motoring but he continued to take a versatile and stimulating part in the life of Dulwich. He married Helen Grace Cornish of Penzance in 1888 and he leaves her with a son and a daughter, Dr Grace Batten, DMRE.

JOSEPH BOLIVAR DE LEE

M D, F A C S

Prof J B De Lee, emeritus among American obstetricians, who died at his home in Chicago on April 2, was known for nearly forty years to many of his English colleagues through his wise and lively editorship of the Year Book of Obstetrics. His life was spent in the practice and teaching of his specialty and much of his private fortune was given to the hospitals with which he was associated. The Chicago Lying-in Hospital will be his real memorial and it is fitting that since 1938 its main building has borne his name.

Underwood & Underwood

Joseph De Lee was born at Cold Springs, NY, in 1869, and received his early education at the College of the City of New York. He graduated from the Northwestern University, then known as the Chicago College of Medicine, in 1891, and after two years spent in the medical schools of Paris, Berlin and Vienna he began work in 1894 at a small maternity centre in the middle of the slums of Chicago. He was at once given a teaching appointment in the obstetrical department of his old college and in 1896 accepted the chair. De Lee early recognised the need for maternity beds; in 1895 he undertook the organisation and building of a lying-in dispensary, in 1899 the hospital for maternity care was founded, and in 1917 the first Chicago Lying-in Hospital was opened. In 1931, when this hospital was affiliated with the University of Chicago and a new institution built on the campus, Dr De Lee had already been appointed to the chair of obstetrics and gynæcology of the university in 1929. In 1932 he inaugurated the Chicago Maternity Center and here until his death he served as consulting obstetrician.

Many advances in obstetric practice are due to De Lee's influence. His stout advocacy of local anæsthesia, particularly in lower-segment cæsarean section, or laparotrachelotomy as he termed it, gained many adherents. He first described the use of prophylactic episiotomy in 1920 and he remained convinced of its value in expert hands. The welfare of the infant concerned him only less than the welfare of the mother, and he always wore a head stethoscope for he considered frequent investigations of the fœtal heart sounds were an important guide to the management of labour. But he held with regret that the time had not yet come to discard craniotomy on the living child in severely infected patients. De Lee used the lithotomy position in manipulative deliveries and strongly urged manual as opposed to fixed support of the legs. In a characteristically pungent editorial a few years ago he wrote "I can think of no better education in obstetrics than would come from holding parturients' legs during operations in all the prominent obstetric clinics of the world. If I were younger I'd like to do this. I would be able to write much better editorials."

His friends regretted that one who had done so much for women and children himself remained a bachelor, but outside his work De Lee had only two hobbies—his farm and photography—and even this last was turned to the service of his specialty. He was responsible for many of the films now used in American hospitals and schools, and the new lying-in hospital was equipped for the making of motion pictures. A friend recalls finding him only eighteen days after a gall-bladder operation, wearing his inevitable white tie, engrossed in preparing the setting for one of his pictures. In 1938 he made a pilgrimage to Lanark to visit William Smellie's library, and as an honorary fellow of the Edinburgh Obstetrical Society it was fitting that he should realise his other ambition—to see a Scotsman born in Scotland—at the Simpson Maternity Hospital.

MEDICAL REGISTER.—The names of the following medical practitioners have been restored to the register after removal for omission to communicate an address: Cristina Austin, Peter Carr, Mary J Dodds and Theodotus J Sumner.

THE ONSET OF RESPIRATION AT BIRTH*

SIR JOSEPH BARCROFT, M A CAMB, F R S

THE inspiratory effort is an event so dramatic as to ave stamped itself on the imagination of the idealist s the earnest of a new vital principle, to the realist he first breath is the necessary initiation of life in a new environment To quote the words of Dr. D H Barron: "When an animal is born and begins its truggle towards an independent existence, its first fforts are those of breathing Breathing is living; he onset of respiration is the beginning of life" If I may figure the first breath as a chord struck on an nstrument I may divide a consideration of the subject nto some description of the instrument itself, and some nvestigation of the impact upon it

In the human species a complete series of observations on the development of respiratory movement during the course of gestation would obviously be very difficult—nay, wellnigh impossible Stray observations at present can only be made at cæsarean sections, and then often when the patient (and fœtus) are subject to a degree of anæsthesia which is prejudicial to the more delicate movements The best course open to us is to make serial observations on other mammals to judge what is so fundamental as to constitute a basis of development common to the higher mammals, to separate this from the differences in detail which may be seen from form to form, and to check up the result, so far as man is concerned, by comparison with such human observations as seem from the experimental point of view most unexceptionable.

As a base line no more appropriate animal is available than the sheep Its gestation period, 5 months, though not so long as that of man, is long as compared with those of the smaller animals Unlike the rat, the sheep does not run through the gamut of its intra-uterine development in 21 days, and as the phases of development do not crowd upon one another they are more easily discerned. Moreover, the sheep's fœtus is as large as the human one, and the sheep stands operation extremely well

Can we, from a study of embryonic life, give even a halting sketch of the way in which the instrument of respiration has been elaborated? Mere inspection of embryonic movement at successive stages in the life of the mammalian fœtus tells us much—a body of information substantial enough to stand analysis Movements of the respiratory type during fœtal life have been described by a number of observers, and in several forms of life These observations have done less than they should to fire the imagination of workers, perhaps because they were not connected with any coherent idea of the general motility in the organism Indeed it would scarcely be possible for them to be so connected without a systematic study of the whole relationship of respiratory movements to general motility, a study involving the observation of the fœtus at stated and suitable intervals during its growth

With a sheep under spinal anæsthesia and immersed in a saline bath at body temperature the amniotic sac can be laid bare and the fœtus—at say 30 days—may be seen through the transparent walls At that age the embryo is about the size of the thumb nail, and floats quite freely in the amniotic fluid, attached to the wall by the umbilical cord Evidence of the heart beat may be seen in the cord, but apart from that no intrinsic movement of the embryo is to be discovered.

DEVELOPMENT OF MOVEMENT IN THE FŒTUS

The development of movement generally and respiratory movement in particular may be divided arbitrarily into four stages, the factors which dominate the successive stages, however, do not arise abruptly—the reverse is the case Each stage as it develops imposes itself upon, rather than replaces its predecessors (fig 1)

Stage 1 *Spasm* —The first neuromuscular movement of which the sheep's fœtus is capable takes place about the 34th or 35th day. If the face of the embryo be tapped sharply between the eye and the mouth the head gives a twitch, it is thrown back a little, and at the same time rotated, the nose being turned towards the side which was struck There is only one point the striking of which evokes the movement; and only one movement evoked Removal of the skin shows that the point struck is just over that to which the maxillary branch of the fifth cranial nerve has grown The functionally effective central nervous system at that time thus consists in something very restricted—an afferent path (the maxillary branch of the fifth nerve), an efferent path, which includes the spinal accessory and upper cervical ventral nerve roots and a central connexion between the two (involving cells, presumably those in the recticulospinal tract, connected with the maxillary branch of the fifth)

As each day passes from the 35th onwards this reflex spasm expands in various ways (*a*) The movement can be evoked from the stimulation of other points. For instance, as the maxillary branch of the fifth nerve extends peripherally, the area stimulation of which evokes movement increases, and shortly involves the nose The ophthalmic branch evokes a response and so on (*b*) The muscles used in the spasm increase in number, and by the 38th day the diaphragm has become involved, but only as an item in a generalised movement; nevertheless it is the first movement of a respiratory muscle Of two fœtuses observed on the 38th day, the diaphragm of one gave a single twitch on stimulation of the face, that of the other gave two successive twitches This brings us to the second stage

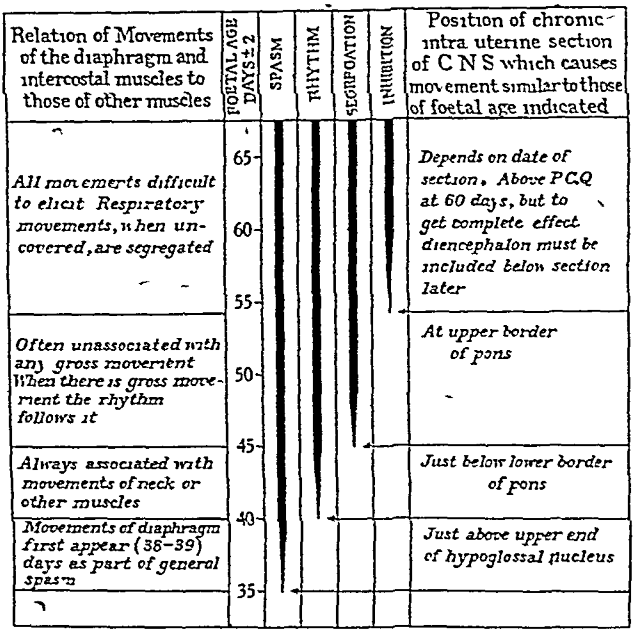


Fig 1

The four stages of development of respiratory and general movement in the fœtus of the sheep

Stage 2. *Rhythm* —By about the 40th day the typical response of the fœtus to a stimulus such as tapping the nose is not merely a spasm but a rhythm of successive spasms As day follows day, the number of spasms which constitute a single rhythmic discharge increases, and the rate also becomes quicker, starting at about 40 to the minute, it rises to over 60 It is in these days that the intercostal muscles are first seen to contract Presumably they do not come into the picture as early as the diaphragm because the spinal centres for the intercostal nerves are lower down the cord than those of the phrenic nerves

Stage 3 *Segregation* —Even as early as the 38th day it was observed that the diaphragm might give two movements when the rest of the body only gave one By the 42nd day careful observation shows that the first one or two spasms in a rhythmic response from the stimulation of the fifth nerve may invoke more muscles than do the subsequent spasms, the respiratory

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1 Abstract of the Linacre lecture delivered on May 6, at St John's College Cambridge

Notes and News

CONGENITAL BRONCHOCOLIC CANAL

J M Urrutia has come across a case of a congenital deformity which appears to be unique, and from the embryological standpoint inexplicable, in that there was a direct communication between the lower ileum, the splenic flexure of the colon and a branch of the left bronchus (*Rev Sanid milit B Aires* 1942, 41, 83) A seaman of 22 was operated on for acute appendicitis Six days after the operation an abscess in the right iliac fossa was drained This was followed 2 days later by the formation of a *fæcal fistula*, which healed spontaneously after 3 months He continued to complain of dyspepsia and foul-smelling eructations, and shortly afterwards developed left-sided basal pleuropneumonia During this phase, while he was being given a soap enema he complained that he could taste soap in his mouth He was admitted to a sanatorium for further investigation because the lung did not clear up , thence he was sent to the military hospital at Cordoba where he came under Urrutia's care He had a supernumerary nipple on the left side, otherwise there were no obvious clinical abnormalities X-ray examination of the thorax showed slightly reduced translucency at the left base A barium meal showed no abnormality A barium enema was to be given, but the preliminary simple enema was followed by a rigor, temperature of 102° F and " congestion " at the left base Two days later the patient passed a large quantity of blood by the rectum, and had to be given three blood-transfusions He recovered, and a barium enema was then given without incident It showed a track lying parallel to the ascending colon A laparotomy was performed, and a canal was discovered opening from the ileum, 2 cm above its termination, and running upwards along the right side of the descending colon to the splenic flexure, where it appeared to terminate in the bowel It was dissected away Just over a month later the patient had another severe attack of rectal bleeding After he had recovered from this another barium enema was to be given, but again the preliminary enema, which the patient said he could taste in his mouth, was followed by a temperature of 102° F and congestion of the left base Bronchography a few days later showed a canal running downwards from one of the left lower bronchi towards the diaphragm A second laparotomy and further search revealed a canal passing from the neighbourhood of the splenic flexure up towards the diaphragm, about the diameter of a little finger It was isolated and injected with 'Lipiodol,' and a subsequent X ray showed the fluid in both the transverse colon and left bronchial tree The canal was dissected away from the colon and followed as far as the diaphragm, where adhesions rendered further dissection so difficult that the operation was terminated, the track being ligatured and divided and the upper end covered with peritoneum Recovery was uneventful Histological examination showed that the wall of both parts of the canal consisted of three layers, serous, muscular and epithelial, with much inflammatory infiltration

Prof J W H Eyre, emeritus professor of bacteriology in the University of London, has been elected president of the Royal Institute of Public Health and Hygiene in succession to the late Sir Thomas Oliver

University of Edinburgh

On July 15 the following degrees and diplomas were conferred —

MD —*J N Hay, *W K Henderson, ‡Donald M'Intosh, ‡A C Mackenzie, †J A Manifold, †‡J M Simpson, and *John Thomson

* Commended for thesis † Highly commended for thesis
‡ In absentia

MB,ChB —Grace Aitken, A F Alexander, Harriet J M Arnott, Mary A Ashton G M Baird, *A H Banton, R C Bignold R E Bosanquet, *I D B Bottomley, H M Bradmore, A W Branwood, Agnes A Brash, John Brims, Margaret E Browne, Elizabeth S Brydone, W H Burnett, Violet S Burns, Catherine C Burt, J D Caldwell, Yun sun Chang, G R Clark M J Colbourne, J O Craig, Jessie A R Cripps, W L Cummings, Reginald Cutts, J T Donaldson, Rose I L Donaldson *J P Duguid, T B Dunn, J R Fountain, M S Fraser, W J Fraser, *R M Fulton, R P Gillespie, J G Gilmour N J Graham, D C Haig J D Halford, Barbara Hall, C W Hamilton W R Hatswell, James Haworth, J A Howell, J C Inglis, G D Jack E L Jacobs, C M Jones I S Kirkland, J E Laing J M Large, A R Laurence K M Leitch, *L G Leitch, W S Locke, *R T S Louttit, C S R Lowdon, A A C MacArthur D G M'Cann, A J A M'Cormick, A B M'Culloch J A M'Ghie, D A Maciver J R Mackenzie, Elizabeth M'Kenzie Newton, Joan E W Mackie J S M'Kinnell, A T MacKnight, D G Maclean, Alistair M'Queen, K A M'Rae, A F J Maloney, F D Martinson, D S Matthews I D Maxwell, G O Mayne, A L Meikle J L Merson Violet F Michie, S L Mitra, Enid M Monson, E V B Morton, E N Moyes Alexandrina K Muir Edith R Munro, D J G Naudé, M J D Noble, James Philip D L Richwhite A C Ritchie Rosemary R M Robinson, S H Roe, J R Rook, Grace Ross, T M Rowatt Diana T Rushforth, Sheina B Scott, J A Simpson W P Small, R H N Smith, S P Smith, *J D T Steele Joan E Stewart I H Stokoe, J N Swanson, J H Taylor, W N Taylor Mair E M Thomas, B A Thompson Anne M Toms, A F Torrie, Katherine E C Traquair, A N Val Davies, D R Wallace J A K Wallace, Marion E Welsh, Leslie Willson T M Wilson, W A Wilson, Margaret P Yeoman, and John Young

* With honours

MB, ChB of the Polish School —Z M Jedlina Jacobson, C K Kolodynski, T M Kraszewski, S H Kryszek, Z A Kutarski, J F Majeranowski, Konstanty Maziec, Boleslaw Rutkowski, J Z Slominski, B J Switalski, W J Waga, Z P Walczak, H M Wójcicki and B A Wronski

DPH —‡Marguerite E M Day Jessie M L Goodbrand, J N Hay, ‡B T Jones ‡Ethel J Kay, ‡Margaret S B Langton ‡Beryl J Lawrence, E J M Shearer, and ‡Doreen M Waddington

DTM & H —F O Adewole W A M Akiyemi, L G Bruce, John Crabb, W E Lawes, and C H H B Sparrow

‡ In absentia

Medical Casualties

The following casualties have been announced

Missing presumed killed —T/Surgeon Lieutenant Cameron Fraser, LRCPE, RNVR , A/Surgeon Commander Thomas Clover Larkworthy, MB CAMB, RNVR , and T/Surgeon Lieutenant Eric Beresford Riding, MB LPOOL, RNVR

Missing in Malaya Capt John Anderson Falk, MB CAMB, RAMC

Wounded —W S/Capt John McDonald Dougan, MB DUBL, RAMC

Previously reported POW, now reported wounded and POW —WS/Captain Aidan Robertson Duff, MB EDIN, RAMC

British Dental Association —Mr C Bowdler Henry will deliver a lecture to the association at 13, Hill Street, London, W 1, on July 28, at 3 P M He will speak on the complications and treatment of impacted wisdom teeth

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

Appointments

Wilson, Henry MD CAMB, MRCP, psychiatrist to the London Hospital and to the department of neurology and psychiatry

Colonial Medical Service —The following appointments are announced —

Crabb John, MRCS DTM & H MO, Nigeria
Ground, K E A U , MRCS, DTM & H MO, Nigeria,
Sparrow, C H B , MB SHEFF MO, British Honduras

Births, Marriages and Deaths

BIRTHS

Cardew —On July 12, at Carlisle, the wife of Dr Peter Cardew—a daughter

Gregor —On July 12, at Swanage, the wife of Lieutenant W Gregor, RAMC—a daughter

Latham —On July 13, in London, the wife of Surgeon Lieutenant W J Latham, RN—a daughter

Leigh —On July 10, at Sevenoaks, the wife of Captain A D Leigh, RAMC—a son

Parkinson —On July 11, at Hassocks, Sussex, to Dr Marian Parkinson, wife of Major J P Parkinson, RAMC—a daughter

Stern —On July 13, at Leamington Spa, the wife of Dr E S Stern—a daughter

MARRIAGES

Barker—Muir —On July 16, at Edinburgh, Peter H Lawton Barker, to Alexandrina Kirkhope Muir, MB

Cama—Huntly —On July 16, at Auckland, Leonard Cama, MB, surgeon lieutenant, RNVR, to Joyce Huntly

Kellock—Pollard-Lowsley —On July 7, in London, Thomas Donald Kellock, MB, to Anne Pamela Pollard Lowsley

Neligan—Bell —On July 18 at Oxford, Gerald Anthony Neligan, MB to Marley Constance Bell

DEATHS

Cross —On July 17, at Scarborough, Thomas Brown Cross, MA CAMB, MRCS aged 88

Dalton —On July 13 James Henry Chesshyre Dalton, MBE, MD CAMB, DPH, aged 81

Skey —On July 13, Arthur Richard Harrie Skey MB LOND, surgeon rear admiral RN, of Catisfield, Fareham Hants

TERMINAL ILEOSTOMY IN ULCERATIVE COLITIS

RODNEY MAINGOT, F.R C S
SENIOR SURGEON TO THE SOUTHEND GENERAL HOSPITAL AND TO THE ROYAL WATERLOO HOSPITAL

MANY patients suffering from idiopathic ulcerative colitis respond satisfactorily to a well-planned and prolonged course of medical treatment No specific therapy has yet been devised, and the success of any particular remedy, such as sulphapyridine, sulphaguanidine (Stickney et al 1942), Bargen's serum (Bargen 1936) or antidysenteric serum (Bargen et al 1930), is no proof of its specificity The indications for operation are difficult to define, because the disease is so protean in its manifestations and in the way it responds to orthodox and other types of treatment Nevertheless, it would be accepted by most that surgery is called for where efficient medical treatment has failed to bring about a cure or to produce relief of symptoms, also where certain complications have occurred, such as subacute perforation or abscess, fistula, sinuses, obstruction, massive hæmorrhage or polyposis, or the possibility of malignancy cannot be excluded In the first group are included all those cases which prove intractable to continuous medical treatment conducted under the best conditions in hospital or nursing institution for a period of about six months, and those chronic ambulatory cases which are totally incapacitated for as long as three months or more in each year

OPERATIVE METHODS

Surgical treatment may conveniently be divided into the following

Methods employed for the purpose of irrigating the large bowel—(*a*) appendicostomy, (*b*) valvular cæcostomy

Methods directed to exclusion of the colon from the passage of fæces by means of ileostomy (*a*) simple loop ileostomy, (*b*) terminal (transverse) ileostomy, either end or single-barrelled ileostomy (Rankin 1935) or implantation of the proximal and distal limbs of the divided ileum into separate incisions in the abdominal wall (Cattell 1939)

Ileostomy followed by colectomy with anastomosis of the ileum into the lowest portion of the pelvic colon or into the remaining rectal pouch

Ileostomy followed by total excision of the colon, rectum and anus

Ileostomy followed by restoration of the intestinal continuity—i e, by end to end or side to side ileo ileostomy or ileo cæcostomy

Until recent years appendicostomy has had numerous supporters and there are reports of many cases treated by this method which have apparently responded satisfactorily But in my opinion—and I was at one time an ardent supporter of this operation—there is no convincing evidence that cases thus treated fare better than with efficient medical treatment alone Valvular cæcostomy possesses no distinct advantage over appendicostomy except perhaps that it is easier to perform Neither of these operations places the large bowel at rest, nor does either of them allow the colon to be irrigated in a manner that is unquestionably better than by washing out from below Hurst (1940) and others have shown by simple radiological experiments that the cæcum can always be reached by introducing a pint and a half of opaque medium per anum and that the colon, especially when it is abnormally irritated, as it is in ulcerative colitis, can be completely evacuated by this means There is consequently no advantage in injecting fluid from above Many authorities have in addition questioned the value of colonic irrigations and instillations in the management of this disease They have brought forward evidence to show that washing out the large bowel with weak astringent lotions, tap water, salt solution, 0 8% sulphanilamide in physiological saline, &c has yielded just as disappointing results as instillations of warm olive oil or crude cod-liver oil with its rich vitamin-A content whether these were injected through an appendicostomy opening or per rectum In the majority of cases these injections or instillations instead of alleviating symptoms or hastening the reparative processes in the gut wall seem to aggravate the condition, to induce colicky pains, to cause unnecessary suffering and to increase the number of daily bowel evacuations Cave and Nickel (1940) drawing from their wide experience, state that "Appendicostomy, cæcostomy and, except for certain cases, colostomy have been discarded as ineffectual surgical measures, and have in the past and do at present complicate further surgery when undertaken "

Ileostomy is the operation of choice There are many types of ileostomy, but in a general way it may be stated that loop ileostomy is chosen when the patient has been exsanguinated by repeated severe hæmorrhages or when in the rare fulminating case toxæmia is pronounced Loop ileostomy is a simple emergency measure which is associated with a high mortality, for it is indicated as a last resort in patients who are desperately ill and in whom medical treatment after a reasonable trial has led to no improvement It needs courage to operate on such cases which are extremely exsanguinated or toxæmic, but I have on occasion seen amazing improvement follow within a few days, and eventually complete recovery The operation is performed through a small right gridiron incision under local anæsthesia (Maingot 1940) The lowest loop of ileum is picked up, drawn through the wound, anchored in position, and then decompressed with a rubber catheter It takes but a few minutes to perform, but in a large percentage of cases the patient dies from toxic absorption

The single-loop method of Rankin, which is the simplest of the elective ileostomies, is nowadays rarely undertaken By this plan the terminal ileum is withdrawn through a McBurney or low transrectal incision, the intestine is crushed with enterotomes, divided with a cautery, and after the distal end has been oversewn and inverted with purse-string sutures of silk it is dropped back into the peritoneal cavity and the operation is completed by closing the wound around the protruding limb of intestine, into which a rubber tube is passed and secured to permit of immediate drainage of the bowel The main objections to this procedure are that the distal stump of ileum may blow out, leak or perforate and thus give rise to a virulent spreading peritonitis if for one reason or another the intracolonic pressure remains unduly raised in the immediate postoperative period, as may, for instance, obtain in the case of a stricture of the large bowel, and if at some future date the operation of restitutio ad integrum is contemplated it is more difficult to apply the criteria of cure than if both ends of the divided ileum were on the surface of the abdomen When therefore an elective ileostomy is called for it is better to divide the ileum about 6–8 inches from the ileocæcal junction and to implant the proximal and distal limbs of the intestine into separate incisions in the abdominal wall after the technique advocated and so successfully practised by Cattell A detailed account of this operation is presented in the case-report which follows

In most instances the ileostomy will be permanent It will, of course, be permanent after total colectomy which is performed in two or three stages, where the patient refuses any further operative interference, or where partial or total colectomy or restoration of intestinal continuity is for one reason or another deemed inadvisable or too hazardous

If the disease appears to be strictly limited to the distal half of the colon and proves recalcitrant to medical therapy, colostomy of the end type (Devine 1935) with interruption of the continuity of the bowel can be carried out in the transverse colon, and the distal half of the bowel be resected after it has been defunctioned for several weeks The colostomy is well tolerated and easy to manage, easier in fact than ileostomy, and the late results in these localised cases of the left colon are on the whole satisfactory In about 80% the disease starts in the rectum or pelvic colon and progresses in

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First, has excessive CO_2 a stimulating effect upon the respiration of the fœtus ? Snyder and Rosenfeld performed a large number of careful experiments chiefly on rabbits They judged of the respiration of the fœtus from the movements which they saw through the uterine wall when the abdomen was open though they checked these up with movements of the abdominal wall in the intact rabbits They state that in 24 experiments embracing 78 fœtuses, excessive CO_2 administered to the mothers produced stimulation of respiratory movements in 8, and had no effect on the other 16 On *the other hand, once the fœtuses were born* CO_2 *exerted* its normal stimulating effect Their conclusion was that "the CO_2 response of the newborn is related to birth rather than to the stage of development" If the CO_2 in the fœtus is reduced, respiratory movements are depressed I take their meaning to be that there is an optimum CO_2 level which is the level normally obtaining in the fœtus

Eastman, Geiling and Lauder (1933) attempted an answer in another way In a number of human deliveries they took samples of the blood from the umbilical cord when the fœtus gave its first breath Applying the carbonic acid content found to the CO_2 dissociation curve of the same blood, they got results so various as to lead them to the conclusion that the onset of respiration was not a simple function of the CO_2 pressure In 1938 I published observations on sheep under urethane in which I could induce no fœtal respiratory movements by the administration of CO_2 to the mother On the other hand, there seems to be no doubt that CO_2 will induce, or at all events accentuate, respiratory movements under suitable circumstances Windle (1940) and his colleagues obtained them in the cat at 44 days Windle's figure shows that a cat fœtus which had been giving respiratory movements off and on at about 2 a minute had them increased up to 33 a minute by administration to the mother of oxygen containing 8% of CO_2 We have observed augmented respiratory movements in sheep where the mother had a spinal anæsthetic and in which the fœtuses therefore had no anæsthetic The following seems to be typical

> "sheep, 83 days' pregnant, was given 10% CO_2 in air, this definitely increased the depth of the respiratory movements which by this time were frequent in any case, owing to exposure Her breathing was much affected The effect of nitrogen alone was much greater, making the fœtus kick about, this it did, even though the mother was not reacting greatly"

This experiment also seems aptly to describe our experiences with regard to oxygen-want The point to emphasise is that respirations of rather a different type are associated with oxygen-want, they are often gasps and generally part of a more extensive muscular movement Moreover, they can be elicited both in fœtuses free from urethane and in those which have had a heavy dose It seems likely therefore that the gasp given by a fœtus in poor condition is liberated by oxygen-want, while in a lively fœtus both oxygen-want and CO_2 excess play a part when the cord is tied Pending more information on this subject, however, it seems desirable to use the word asphyxia to denote that combination of oxygen want and CO_2 excess which is brought about by failure of the placental circulation Certainly the oxygen level in the blood coming from the brain seems pretty accurately to define the limits of asphyxia necessary to invoke respiratory effort This limit varies somewhat with the age of the fœtus but it may be said fairly exactly that if the blood in the sinuses coming away from its brain carries less than a quarter of its possible load of oxygen, a fœtus aged 90–120 days would show respiratory movements, and that this limit gradually sinks to 15% at term

Sensation —A catalogue of the forms of sensation which may conspire to initiate respiration at birth would include reactions to specific sensations as well as a general heightening of the sensibility of the nervous system caused by the establishment of general sensibility on a large scale Moreover, cutting across such a classification would be the division of sensations into extraceptive and proprioceptive

Among specific sensations acting outside the body pain (if such a word can be applied to the experiences of an organism so anoxæmic that it can have no real consciousness) can have a dramatic effect There can be no more specific reaction than that of the gasp in a refractory rabbit's fœtus when the ear is firmly pinched Among specific stimuli from the inside of the body the rise of blood-pressure associated with the cutting off of the placental circulation can possibly be a factor in the initiation of respiration at birth It is not a necessary factor, since examples are on record of animals in which pinching the cord has induced gasping in the absence of hypertension On the other hand in sheep fœtuses in *good condition slowing in the pulse* appears within 5 sec of the rise of pressure caused by the occlusion of the cord, this phenomenon is abolished by section of the vagi and it would seem likely to be a reflex due to stimulation of the aorta or carotid sinus mechanisms or both If so, the possible reactions of these same mechanisms on the respiratory centre cannot be excluded

Among internal sensory impulses those carried by the vagus first occur to the mind, but of course the volley of afferent impulses brought to the brain along the vagus is initiated by the expansion of the chest, and whereas these afferent muscular proprioceptive impulses are all important after the first inspiration, they can scarcely be regarded as a factor in launching the first breath Apart from such specific sensations the general flood of stimuli from the skin and probably from the muscles and the joints are of first importance, for we must remember that at birth not only is the surface of the fœtus exposed to cold and to contact with surrounding objects, but removal of the embryo from its aqueous environments subjects it to the strains put upon it by its own weight No analysis has been made of these varying sensations, but, their accumulated effect is shown by the degree of muscular tone which they invoke A fœtus with its placental circulation intact alternately taken out of and replaced in its bath of saline, exhibits muscular tone to the point of shivering when it is taken out of the bath and relaxation when it is replaced

In the course of a long series of experiments I naturally have been confronted with a number of fœtuses which showed little inclination to breathe even when the cord was ligated In such cases I have found myself implementing the principle set forth above—namely, the initiation of the greatest number of afferent impulses, especially from the sensory endings of the fifth cranial nerve, and then combination with an oxygen supply so copious that when a gasp does take place the blood may acquire as much oxygen as possible, and thus render the brain more receptive to the next sensory volley In practice this amounts to the direction of the stream of oxygen from a cylinder on to the fœtus more especially on to its face, nose, and mouth, once the air passages have been rid of mucus I use the word "stream" not "trickle," because the current of oxygen should stimulate as large a surface as possible, and the atmosphere round the mouth and nose should be rich in that gas The stream of oxygen should, in fact, be as vigorous as is deemed compatible with the welfare of the fœtus always bearing in mind that, unless a fœtus breathes it has no welfare I mention this procedure because I have been occasionally surprised by the dramatic success which has followed it

Remembering that the newborn fœtus has had no respiratory exchange for some time and is therefore overloaded with carbonic acid, I can see little point in adding that gas to the oxygen at this stage, though a certain admixture of nitrogen may be desirable to prevent the lungs collapsing completely should the interval between the gasps be long enough for the complete absorption of the oxygen inhaled At a later stage, when the respiratory rhythm has been established, CO in the oxygen is desirable

Such then is the picture that I draw of the onset of respiration at birth Perhaps it is too much to claim even that it is a picture, rather I regard it as a blocking out of one, for a lifetime might be spent in filling in the details

I wish to thank Mr W S Mansfield and the Cambridge University Farm staff, for providing suitable ewes, and the LCC officials and the staff of the British Postgraduate Medical School who gave me the opportunity to test whether correspondence existed with human cases

References at foot of next page

exploration was conducted nor was the colon palpated to detect the extent of the disease lest infection should be disseminated into the general peritoneal cavity The ileocæcal junction was identified, and as the last few inches of the ileum were involved in the inflammatory process a portion of the intestine about 10 in from the ileocæcal junction was selected for the ileostomy After identifying the lower reaches of the ileocæcal artery, the ileomesentery was cautiously incised vertically on each side so that two or three of the arching blood-vessels could be isolated, tied off in two places and divided, thus allowing a fair degree of mobility when the intestine was transected with an electric cautery Through a small stab wound, which was made at the outer border of the right rectus muscle and was placed slightly above the upper margin of the first incision, a pair of curved artery forceps was passed to clamp the distal ileum Another hæmostat was then applied through the original muscle splitting incision beside it on the proximal ileum, and the bowel was cut through with a cautery, as shown in fig 1 The distal ileal limb was immediately withdrawn through the stab incision and the skin edges were approximated with one or two interrupted sutures of fine silk The bowel was not stitched to the parietal peritoneum as the clamp was left in situ for 5 days, during which time the gut had opportunity to become firmly fixed to the small abdominal incision The proximal or functioning ileal limb was raised and the free edge of the mesentery was sutured to the under aspect of the peritoneum (fig 2) The margins of the peritoneum and rectus muscle were then loosely drawn together around the projecting ileum so that its feeding blood-vessels were not compressed or caught up in any stitch The ileum itself was not sutured to the peritoneum since a fistula is apt to result even when such sutures are introduced cautiously and take up only small bites of the seromuscular coats of the intestine The tension on such anchoring sutures may be very great, with the result that they may cut out or lead to a localised area of gangrene, to subsequent perforation and peritonitis, or to spreading suppuration in the layers of the abdominal wall The wound was closed snugly about the ileum, which was made to protrude about 2 in beyond the sutured incision After removing the clamp on the proximal ileal limb, a rubber tube about the size of one's index finger was introduced into the intestine for 3–4 in and stitched into position with a purse string suture of strong silk The wounds and an area of surrounding abdominal wall were finally protected with wide sheets of flamed 'Elastoplast' (fig 3)

POSTOPERATIVE TREATMENT AND SUBSEQUENT PROGRESS

After four days the discharge from the ileum became too thick to pass readily through the rubber tube, which was led to a bottle underneath the bed, so a small Winsbury-White suprapubic catheter was substituted and drainage was aided by means of continuous suction applied to the distal end of the catheter After the first postoperative week it was found futile to persevere with catheter drainage, and the functioning ileostomy was permitted to discharge freely into voluminous dressings The protective adhesive dressings which were applied directly to the incisions were removed on the 8th day after operation, and after taking out the skin stitches the whole area was thoroughly smeared with ballerina paste (powdered aluminium 1 part by weight, zinc oxide 2 parts by weight, liquid paraffin 2 parts by volume) A special cæcostomy bag made by the Genito-Urinary Manufacturing Co was then fitted on, and as the stump of proximal ileum projected about 1½ in beyond the abdominal wall, most of the corrosive intestinal contents were discharged directly into the rubber bag without much soiling of the skin

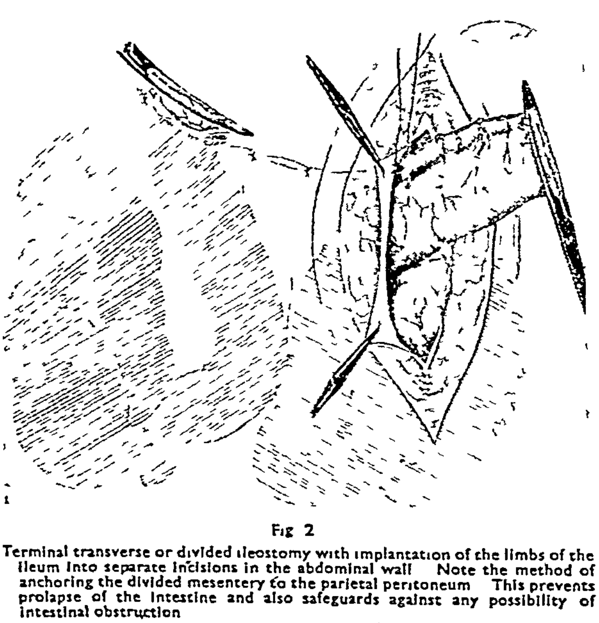

Fig 2

Terminal transverse or divided ileostomy with implantation of the limbs of the ileum into separate incisions in the abdominal wall Note the method of anchoring the divided mesentery to the parietal peritoneum This prevents prolapse of the intestine and also safeguards against any possibility of intestinal obstruction

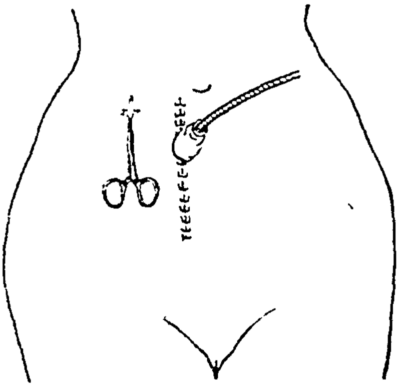

Fig 3

Terminal transverse or divided ileostomy with implantation of the limbs of the ileum into separate incisions in the abdominal wall The operation completed The hæmostat on the distal non-functioning ileal stump remains in situ until it cuts through the bowel wall A rubber tube or catheter has been inserted into the proximal or functioning ileostomy this having been fashioned so as to project some 2 in beyond margin of sutured incision

After this operation the patient made a splendid and uninterrupted recovery, and after instruction on the management of the ileostomy and the ileostomy bag she was discharged on Feb 19, 1940 I do not consider irrigations of the colon of any appreciable benefit in this disease, so we made no use of the distal ileal (mucous) fistula for this purpose

I examined her on several occasions during the next twelve months She was managing the ileostomy bag very well, and on an average there were about 8 ileal motions a day After a while the discharge ceased to be irritating and the skin about the ileostomy stomas was not irritated in any way As she was gaining in weight, as there was no discharge of blood or mucus per anum, and as she was anxious to have the ileostomy closed, she was readmitted for further investigation on Feb 20, 1941, a year after the terminal ileostomy. We now had the difficult task of deciding whether or not the colitis could be regarded as healed, and if so whether it was safe to close the stomas and restore the continuity of the intestinal canal What are the criteria of cure in this treacherous disease ? Well, she had already gained 19 lb in weight, she looked fit and well, she was not anæmic, there was no discharge of blood, mucus or pus per anum, and on sigmoidoscopy the mucous membrane of the rectum and lower sigmoid colon appeared normal and there was no evidence of contraction of the bowel Two litres of normal saline were injected into the colon and retained there for a few minutes After this was expelled and collected, the fluid was centrifuged and the precipitate was examined microscopically for red cells and leucocytes No pus cells or red blood corpuscles were found in the deposit Barium enema X ray examinations of the excluded colon were then carried out, (1) immediately after washing out the large bowel with salt solution, and (2) after a quantity of ileal fæces had been injected through the distal or non-functioning ileostomy The radiograms obtained in the two series were striking In the first series the whole colon looked tubular and contracted—lead-pipe colon—and the usual haustral markings were absent, while in the second series of pictures haustrations were present throughout the large gut which although somewhat spastic and irritable did not appear to possess an unduly narrow lumen in any part of its course It should be remembered that a barium enema X-ray examination of the excluded or defunctioned colon always—or nearly always—shows complete absence of haustral markings, but this would occur if it were entirely healthy, for haustration, as Hurst has pointed out, is the manifestation of the activity of the muscularis mucosæ, the function of which is to mix the colonic contents Thus none occurs in an empty nonfunctioning colon

The final test consisted in introducing certain substances into the colon through a catheter passed into the distal the mucosa and deeper layers of the bowel wall in an anti-clockwise direction until the cæcum or even the last few inches of the ileum are implicated, but in the remainder the ulcerative process is limited to one portion of the bowel or may even have a patchy and bizarre distribution If we exclude the chronic localised cases involving the left half of the colon, for which a defunctioning colostomy followed later by excision of the colon is indicated, then, where radical surgical measures are called for, *subtotal or total colectomy will be the method* of choice as soon as the terminal ileostomy is capable of being satisfactorily managed and the colon is thoroughly rested and rendered as free from infection as is possible

After a subtotal excision of the colon it may be feasible in a favourable case to anastomose the proximal or functioning ileal limb to the stump of the sigmoid colon or even to the rectal cul-de-sac I do not however believe that it is rational to perform an anastomosis between the ileum and sigmoid colon or between the ileum and rectum if there is any disease whatever in the distal segment of intestine If this operation is performed the disease in the rectum or in the remaining segment of large bowel which may be quiescent is apt to be lighted up, to progress apace and eventually to produce a pelvic abscess, abdominal or peritoneal sinuses, or suchlike complications But where there is good evidence that the long-rested and excluded rectal pouch or rectosigmoidal segment is healthy and has remained staunch for at least a year after terminal ileostomy and partial colectomy, implantation of the liberated ileal limb into the small remaining stump of large bowel may be considered, and it is only when it is carried out in such favourable circumstances that the operation has anything to offer

I have previously stated that in most cases the ileostomy is permanent, but " there is one favourable feature in the treatment of these cases if early ileostomy is elected When in the past we have considered ileostomy as a permanent necessity in these cases, in the last five years we have been able to close the ileostomy with restoration of intestinal continuity in four patients in whom ileostomy was done early and satisfactory healing in the colon followed It seems possible that if early ileostomy is done in some of these cases, closure of the ileostomy may be done more frequently " (Cattell 1939) The number of reported cases in which it has proved possible to perform ileo-ileostomy or ileocæcostomy and thus restore continuity of the intestinal stream have been scanty Cave and Nickel (1940) reported 22 cases, Bancroft (1940) 4, and Cattell (1939) 4, while Stone (1940), Strauss (1923), Trout (1936) and others (Maingot 1940, Miller 1940) have recorded similar cases and given an account of their experiences with ileostomy followed by closure

In view of the rarity of the operation of ileo-ileostomy or ileocæcostomy following terminal ileostomy for ulcerative colitis and of the great difficulty experienced in deciding which cases are in fact suitable for this procedure, the following details of a " successful " case are submitted I use the word successful guardedly for it is impossible to say that after any given period of freedom from activity the disease will not recur, so long as the colon remains in situ one cannot regard any case of ulcerative colitis as permanently cured, and in no fewer than 25% of the recorded cases recurrence followed ileostomy with subsequent closure My patient is perhaps fortunate in having survived terminal ileostomy, which is associated with an all-round fatality of about 30%, and also ileostomy with subsequent closure, which has a fatality of about 20%, furthermore, some fourteen months after restoration of the intestinal stream she has gained over 28 lb in weight, her bowels act only once a day and without the aid of aperients, the fæces are well-formed and free from any trace of blood or mucus, her appetite is good, she is doing a full day's work and she looks the picture of health

CASE-REPORT

A married woman, aged 28, was admitted to the Southend General Hospital on Nov 8, 1939, complaining of severe abdominal pain, vomiting, diarrhœa, the passage of blood in her motions and a feeling of exhaustion She enjoyed good health until November, 1935, when she started to get recurrent colicky pains in the abdomen and suffered from tiredness About two years later she passed blood in her motions, had attacks of diarrhœa, and started to lose weight Abdominal cramps often preceded a bowel movement In October, 1939, she was treated for three weeks at a general hospital as a case of acute ulcerative colitis before being referred to me

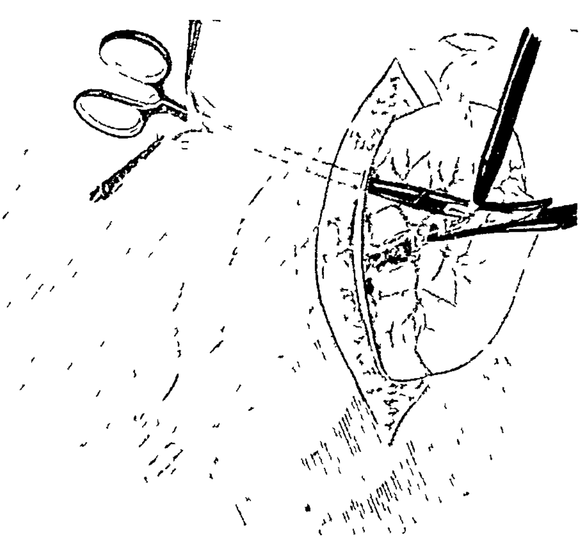

Fig 1

Terminal transverse or divided ileostomy with implantation of the limbs of the ileum into separate incisions in the abdominal wall The mesentery of the ileum has been divided and the intestine is being severed between hæmostats with an electric cautery

She appeared to be gravely ill and exhausted, her mind was confused and she was uncooperative and petulant The temperature was high and remained so for several days, the pulse rate was rapid, the respirations somewhat hurried, the face flushed and the eyes hollow and glistening Signs of dehydration were present, the tongue being dry and brown and covered with dirty fur The abdomen was slightly dome shaped and was tender on palpation Rectal examination, which was painful, was followed by a gush of highly offensive dark red slimy liquid fæces The pelvic organs were normal and the kidneys could not be palpated There was œdema of both lower extremities During the first week after her admission she was passing 10–15 blood stained motions in each 24 hours The urinary output was scanty and the urine contained a trace of albumin and acetone

Bacterial examination of the fæces revealed no specific causative factor, and the patient's serum failed to agglutinate any of the various strains of *Bacillus dysenteriæ* Blood investigation showed a secondary anæmia, and the blood urea was 54 mg per 100 c cm Proctoscopy and sigmoidoscopy followed by barium enema X ray examinations and contrast enemas supported a diagnosis of idiopathic ulcerative colitis There was no evidence of pseudopolypi or strictures of the colon

She was given a brief trial of medical treatment which consisted of repeated small blood transfusions of freshly citrated blood, vitamins A, B, C and K in adequate dosage, a course of sulphapyridine (32 g in 5 days), sedative drugs such as 'Nepenthe,' phenobarbitone, codeine, &c, an easily assimilable diet containing a generous protein content, and daily instillations per anum of 4–5 oz of crude cod liver oil She showed some all round improvement on this regime, but on Nov 23 she relapsed and became gravely ill and toxæmic She was now passing about five stools a day, but the blood loss was not so pronounced

FIRST OPERATION

Terminal ileostomy with implantation of the proximal and distal limbs of the ileum into separate incisions in the abdominal wall was performed under cyclopropane anæsthesia on Nov 25 A vertical incision 3 in long was made over the lower half of the right rectus muscle at the junction of the inner and middle third, starting below and slightly to the right of the umbilicus The muscle was split in line with its fibres, the peritoneum was opened and each margin was picked up with hæmostats and retracted, and the last 2 ft of the ileum was drawn on to the surface of the abdomen No pale but not very ill, the cervical, axillary, inguinal and epitrochlear glands were enlarged, and although there was a slight cough the lungs showed no abnormal physical signs The heart also appeared normal and throat healthy There was some tenderness and rigidity over the gall-bladder, but neither the liver-edge nor the spleen was palpable Urine normal There was no trace of a rash, nor any history of one While at the reception station there had been a rise of temperature to 101° F but the temperature while in hospital remained normal Pulse- and respiration rates were normal throughout X-ray examination of chest showed no enlargement of mediastinal glands His convalescence was uninterrupted, and he was discharged from hospital on Jan. 6, 1942

These two cases present the same clinical features as those reported by Martin In case 1 the jaundice was prominent and was in evidence before the lymphatic glands became enlarged, in case 2 the jaundice was mild and transient and appeared early in the course of an attack of glandular fever The positive direct van den Bergh test in case 1 suggests that the jaundice was of obstructive origin

In order to ascertain if the association of glandular fever with jaundice was being missed or overlooked, I asked medical officers to have blood examinations done and a careful search made for enlarged lymphatic glands in patients with jaundice, but in no instance yet have cases similar to the above been discovered

I should like to thank Major General G A Blake, K H S, deputy director of medical services, Western Command, for permission to publish these notes

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SKIN-PIGMENTATION WITH DEMENTIA

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A MAN of 37 was admitted to the observation ward from an institution to which he had been sent because he was destitute The history given by a former employer was that the patient began to work for him 10 years ago at distributing handbills There was then nothing remarkable about him, his skin was quite white and he did his work well Some years later his employer noticed that the man's skin was getting darker and that he was deteriorating mentally, becoming vague, unable to concentrate and extremely unreliable, often coming back with his handbills undistributed Four years ago because of this he had to discharge him There is then a gap in the patient's history until 3 months before his admission when he took the two rooms from which he was removed to the institution He soon fell out with the landlady because of the filthy state in which he kept them and she was forced to send for the sanitary inspector

From the patient s father it was learnt that he came from an old Yorkshire family on the father s side and that his mother's people were Londoners No admixture of foreign blood was known of, but his father s family tended to be dark skinned and to sunburn easily, although not to a strikingly abnormal extent He had always been obstinate, self-centred, quarrelsome, with an exaggerated idea of his own importance, and very lazy with regard to his work, but exceptionally neat and tidy and careful of his personal appearance He was backward at school and since had never been able to keep a job longer than eight or nine months on account of his personality defects and clumsiness, incompetence and apparent stupidity His mother, for whom he had a strong fixation, died when he was 25 years old, his father remarried a year later and he then became violently antagonistic both to his father and stepmother After constant quarrels he left home at the age of 29 and his family did not hear of him again until notified that he had been removed to hospital

He was elated, on admission, and paraded round the ward in a grandiose, hyperextended attitude, declaring that he was "in the pink, as strong as a lion and a hundred per cent" His movements were unnecessarily violent, erratic and jerky, for example, if asked to lie down he would throw himself back in a manner likely to break the mattress Although he talked incessantly he made the same remarks over and over again, many hundreds of times, varying his phraseology little all the time he was under observation He usually prefaced his remarks by saying that doctors were his friends and went on to ask for his discharge as he was very worried about his flat If one returned to him some ten minutes later he would reproduce the whole speech almost word for word He showed no gross disorientation or amnesia and could answer simple questions fairly accurately. He micturated and defæcated shamelessly in the middle of the ward and showed no appreciation of the quality of this behaviour

There was a generalised brownish yellow pigmentation of the skin, fairly evenly distributed but rather deeper on the face and neck and much deeper on the scrotum and nipples, which were almost black. The buccal mucous membrane showed bluish patches, chiefly on the gums and sides of the tongue There was some dental caries but no pyorrhœa or localised stomatitis Apart from the pigmentation, the skin and mucous membranes appeared quite healthy with no evidence of infestation by parasites, and no scratch marks His hair was thin and the top of his scalp bald The only constant abnormality found in the central nervous system was extensor plantar responses, although at different times a slightly irregular pupil on the left side and absent abdominal responses on the right side were noted There were no abnormalities in the cardiovascular system and the blood-pressure was 120/80 mm Hg on two occasions, after resting in bed for some hours The respiratory system and abdomen were normal There was no evidence of enlargement of liver or spleen His thyroid was not enlarged and there were no signs of hyperthyroidism or other endocrine disturbance. The Wassermann reaction was negative in the blood, and also in the CSF which was otherwise normal, with a negative Lange curve, a protein content of 50 mg per 100 c cm and a cellular content of 3 lymphocytes per c mm The urine contained no albumin, bile or excess urobilin, did not reduce Fehling's or Benedict's solutions and did not darken on standing The blood showed no abnormality, Hb 90%; red cells 4,500,000, colour-index 1, white cells 7800 (neutrophils 65%, lymphocytes 28%, eosinophils 5%, monocytes 2%) The hair was analysed for arsenic but none was found

DISCUSSION

The cutaneous pigmentation resembles accurately that found in Addison's disease and mulattoes, but the former can be excluded by the normal blood-pressure and absence of asthenia and the latter by the history The dementia is remarkable for the early age of onset and the slowness of its progress, these with the neurological signs, suggest a diffuse cortical atrophy Features of any conditions in which pigmentation of the skin is associated with dementia (such as pellagra, neurofibromatosis and metallic poisoning) are absent

Pigmentary abnormalities are not uncommonly associated with neurological disorders, but they are patchy and usually resemble a vitiligo (Ellerman and Schroeder 1933) Cases have been described in which pigmentation of the skin is associated with pigmentation in the brain (Grahl 1906, Maclachlan 1913 Kessler 1937); they are usually regarded as benign nævi but they have all been in children and there is no record of any progressive mental deterioration having occurred The malignant melanoma, which is not so rare, progresses fairly rapidly to a fatal issue (Farnell and Globus 1931)

I wish to thank Miss M G Seward, psychiatric social worker to St Francis Hospital, for investigating the history, and Dr O W Roberts, medical superintendent of the hospital, and Dr Allen Daley for permission to publish this case

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DOSAGE OF MEPACRINE —In an annotation last week (p 102) on the successful treatment of giardiasis by mepacrine ('Atebrin' Bayer) the dose of 0 1 g was incorrectly printed 1 gramme The slip is serious since the margin between therapeutic and toxic doses is not very wide and it is the more unfortunate because the maximum dose of mepacrine hydrochloride was incorrectly given in the BP Third Addendum (p 15) Zeus is not often caught napping and the error was picked up in the Fourth Addendum nine months later But it should be reiterated that a whole gramme is an excessive dose ileal stoma to ascertain what the colon could tolerate The following were injected milk, albumin water, oatmeal gruel and then diluted ileal fæces The fæces, which were discharged through the proximal ileostomy, were collected and at first diluted with water, then gradually made stronger until eventually the whole of the ileal discharge was introduced into the colon undiluted The ileal contents were well tolerated in the colon, the bowels were evacuated once or twice a day, the stools being well formed and containing no blood or pus As there were no signs of a flare up of the active process after several days of testing and training the large gut, it was decided to re join the divided ileum

SECOND OPERATION

Closure of the ileostomy stomas followed by side to side ileocæcostomy was performed on Feb 8, 1941, under endotracheal gas oxygen-ether anæsthesia Both ileostomy stumps were dissected from the abdominal wall, invaginated and closed, and as the distal limb of the ileum was atrophied and somewhat sclerosed it was amputated about an inch from the ileocæcal junction, the stump of the ileum being invaginated into the capacious cæcum through the ileocæcal valve, and two purse string sutures of silk were used to close the defect in the cæcal wall The appendix was long and tortuous and contained many fæcaliths It was therefore amputated and its stump invaginated with a purse string suture The ileum which was prepared for anastomosis was then joined to the anterior aspect of the cæcum and an isoperistaltic side to side anastomosis was fashioned in the usual manner with the aid of enterostomy clamps The abdominal incisions were approximated in layers and the wounds sealed off with adhesive plaster impregnated with sulphanilamide

POSTOPERATIVE COURSE

The wounds healed well, the bowels acted without enemata or aperients on the fourth postoperative day, and after that there were one or two daily evacuations while she was in hospital She was discharged on March 28, 1941, and reported every two months afterwards She was examined for the last time in April, 1942, when she was found to be well in every respect

SUMMARY

Surgery is indicated in idiopathic ulcerative colitis where efficient medical treatment has failed to bring about a cure or produce relief of symptoms, and where certain complications have occurred, such as fistula, sinuses, obstruction, subacute perforation or polyposis, or the possibility of malignancy cannot be excluded

The operation of choice is terminal ileostomy, preferably with implantation of the proximal and distal ileal limbs into separate incisions in the abdominal wall Such operations as appendicostomy, cæcostomy, &c, which were employed for the purpose of irrigating the large bowel, have now been more or less abandoned The various operative procedures together with a choice in individual cases are briefly discussed

A case of idiopathic ulcerative colitis which was successfully treated by terminal ileostomy followed a year later by restoration of intestinal continuity is described The difficult problem is to decide whether or not the colitis can be regarded as healed after terminal ileostomy, and if so whether it is safe to close the stomas and restore the continuity of the intestinal canal

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The military medical service of Venezuela has started a periodical of its own, the *Revista de Sanidad Militar* The first number contains articles on fractures of the lumbar transverse processes, the eyes in aviation and other subjects connected with the health of the fighting services

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GLANDULAR FEVER WITH JAUNDIC

Robert Priest, C B, M D Camb, F R C P
BRIGADIER, CONSULTING PHYSICIAN TO THE WESTERN COMMA

The publication by Martin[1] of two cases of the un
occurrence of glandular fever with jaundice has prom
me to submit an account of two very similar cases

Case 1 —A lieutenant, aged 28, was admitted to a
hospital in France on Feb 29, 1940, complaining of the gr
onset of headache, of feeling feverish, and of shivering
general weakness over the preceding 3 days The head
was mainly behind the eyes, the fauces were injected,
with the exception of some mild bronchitis there were no
abnormal physical signs On March 1 there was a rise in
perature, but nothing was found on examination to acc
for it Urine normal Next day there was some epist
the headache persisted, and he was coughing and bringin
a little numular sputum, a slight icteric tinge in the s
tics was noticed Liver edge palpable below the right c
margin, but no tenderness, spleen did not seem to be enla
On March 4 he complained of some abdominal discor
with looseness of the bowels which lasted for 2–3 day
few hæmorrhagic macules appeared on the abdomen an
lymphatic glands beneath the left jaw and in the left post
cervical chain became palpable No enlargement of
lymphatic glands was discovered Blood count this day
suggestive of glandular fever (see table I) On March
jaundice began to disappear, by the 8th he was feeling
better, and on the 11th there was only a trace of the ict
by the 14th the temperature, which had been slightly irreg
had settled down, the jaundice had disappeared and
valescence was established The pulse rate never exce
104 and the respirations remained normal throughout
temperature was in the region of 101° F from March 1
but then fell to normal

TABLE I—BLOOD FINDINGS IN CASE I

—	March— 1	5	11	18	2
White cells per c mm	12 900	16,500	9450	6450	73
Polymorphs %	19	22	22 5	27	47
Lymphocytes %	58 5	54	70 0	63 5	47
Monocytes %	22	23	6 5	7 0	4
Eosinophils %	0 5		1 0	1 5	1
Basophils %		1		1 0	

Many of the mononuclears appeared primitive with gran
nuclei Widal *Bacterium typhosum* 1/250, *Bact*
typhosum A, 1/500, *Bact paratyphosum B* 1/50 (inoculate
September, 1939)

Van den Bergh reaction on March 8 direct pos
Paul Bunnell reaction on March 4 + 1/480

TABLE II—BLOOD FINDINGS IN CASE 2

—	December— 11	15	18	21	
Red cells per c mm (millions)	4 61			4 7	
Hæmoglobin %	81			80	
Colour index	0 8			0 8	
White cells per c mm	14,600	13,700	14,300	12 400	6
Polymorphs %	6	6 5	10 5	15	
Lymphocytes %	26	15 0	11	13	
Monocytes %	68	78 5	78	71	
Eosinophils %			0 5	1	
Basophils %					

Many of the monocytes showed pathological cha
(glandular fever cells)

Van den Bergh on Dec 11 direct neg, indirect neg
Bunnell reaction by Dec 11 + 1/256

Case 2 —A signalman, aged 28, was admitted to a c
reception station on Dec 7, 1941 He had had indiges
for some years but about Nov 28 had pain in the right h
chondrium which radiated through to the back and into
right shoulder This attack was accompanied by head
loss of appetite, a feeling of exhaustion, slight cough
later by jaundice and dark urine The jaundice was not
deep and soon disappeared, for there was no evidence of
the time of admission to the reception station He
transferred to a military hospital on Dec 11, where he loc

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[1] Martin, L *Lancet*, 1941, ii, 480

THE LANCET

LONDON, SATURDAY, AUGUST 1, 1942

THE HOSPITAL'S LIABILITY

IF hospitals are not always pleased with patients, patients are not always pleased with hospitals Litigation against the latter may be expected to increase as the result of the Court of Appeal's recent decision in Gold *v* Essex County Council Ever since 1909, when Lord Justice KENNEDY gave his oft-quoted views in Hillyer *v* St Bartholomew's Hospital, a hospital has enjoyed a certain immunity when sued for damages for the alleged negligence of surgeon, doctor or nurse The maxim *respondeat superior* carries important consequences, but there is no liability unless the relationship of master and servant be present "It is open to argument," said the trial judge in the Hillyer case, "how far the professional staff of one of our English hospitals comes under the title of employees, but it seems obvious that, if the authorities have done their best to secure a competent staff, their liabilities should cease there, as they cannot possibly supervise by personal attendance the work of the physicians and surgeons in the wards" This is the principle which Lord Justice KENNEDY endorsed Now the Hillyer decision is overthrown Leave has been given to take the matter to the House of Lords, but, unless the supreme appellate tribunal reverses the Court of Appeal, the textbooks must be corrected and hospitals must consider how to cover their increased risks of adverse verdicts

Ruth Gold, a five-year-old child, was treated at the council's Oldchurch hospital at Romford for the removal of warts on her face by grenz rays Mr Mead, the radiographer, a full-time salaried employee of the hospital, on one occasion used a screen of lint instead of the usual mask for the face, the result was permanent scarring and disfigurement In the King's Bench Division Mr Justice TUCKER held that Mr Mead had been negligent but that the county council was not liable, the council's sole duty was to provide a competent radiographer, Mr Mead, though negligent in this instance, was indisputably competent The trial judge was bound by the Court of Appeal's view in the Hillyer case The Court of Appeal has now ingeniously cut down the supposed authority of that view Lord GREENE, the Master of the Rolls, analysed the decision of 1909 He found that his predecessor (Sir RICHARD HENN COLLINS) had given no reasoned judgment but had simply concurred with his two colleagues Of these two colleagues Lord Justice FARWELL had decided on narrow grounds in favour of St Bartholomew's Hospital, Lord Justice KENNEDY on unnecessarily wide ones Lord GREENE takes the narrow view as the true *ratio decidendi* Lord Justice FARWELL, he considers, was examining the position of hospital authorities only in relation to what took place in the operating theatre Nothing in the Farwell judgment supported the view that hospital authorities were not liable for the negligent acts of nurses in performing general duties of a purely administrative or domestic nature, such as giving a patient his meals The true ground, said Lord GREENE, on which a hospital escaped liability for the act of a nurse who, whether in the operating theatre or elsewhere, was acting under the instruction of a surgeon or doctor, was not that she ceased for the time being to be a servant of the hospital but that she was not guilty of negligence if she carried out the orders of the surgeon or doctor The reasoning of the Farwell judgment did not cover such a case as Mr Mead's Mr Mead did what he did on his own judgment, he was not under the orders of a medical man except as to the nature of the treatment and the dose Lord Justice KENNEDY's view was that the hospital authority's sole liability was to take care that the patient was treated only by experts of whose competence the hospital had taken pains to assure itself and that the available apparatus was proper This view was that of Lord Justice KENNEDY alone, there was no legal authority for it in England, it went beyond the scope of the Hillyer case and was therefore a mere dictum, the Court of Appeal was free to disregard it and to consider the matter afresh "I cannot see," observed Lord GREENE, "that hospital authorities do not undertake towards a patient the duty of nursing him as distinct from the obligation to provide a skilful nurse" The Romford Hospital assumed the obligation to treat Ruth Gold by the hands of Mr Mead with the apparatus provided The county council's liability was established, the negligence of its servant was clear, the damages were assessed at £300

The Master of the Rolls, it will be seen, does not favour the idea that a hospital undertakes the obligation to perform by its nursing staff only administrative work and not the essential work of nursing This idea he described as unworkable in practice and indeed contrary to common sense Lord GREENE's important opinion seems to deal more fully with a hospital's responsibility for a nurse than with its responsibility for other professional staff Is the surgeon, if he be negligent, equally the servant of the hospital? And is there any distinction between a surgeon who holds an honorary staff appointment and a whole-time salaried officer? Presumably no difference can be discovered between the liability of a voluntary hospital and that of one which is conducted by a local authority under statutory powers and duties, although in practice a plaintiff may be aware that juries (temporarily in abeyance) may be more generous at the expense of the latter Many important cases have lately been luminously reviewed in the House of Lords where Lord SIMON presides It may be hoped that the Essex County Council's appeal will give hospitals the clear lead for which they are waiting

THIRST AT SEA

WHEN the mammals left the sea, the fluid which bathed their cells was presumably isotonic with sea-water, but since then while the sea has got salter our internal environment has not, until now the sea contains some 2 7% of sodium chloride and our blood but 0 9% Neither have we acquired in these æons any mechanism for the selective absorption of water from a hypertonic solution—sea-water in the stomach will abstract fluid from the tissues by osmosis and not vice versa Thirty years ago MORLEY ROBERTS suggested that such a mechanism does exist in the rectum, and he later[1] backed his theory with the tale of Mr Graham, "for whose bona fides many well-

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[1] *Brit med J* 1918, i, 220

Reviews of Books

Diseases Transmitted from Animals to Man

(2nd ed) THOMAS G HULL, Ph D , director, The Scientific Exhibit, American Medical Association London Bailliere, Tindall and Cox Pp 403 30*s*

COMPARATIVE medicine has made strides in the past decade, the veterinarian, the pathologist and the epidemiologist are realising the interrelationships of their various problems, and with increasing research in veterinary diseases the liaison between "animal" and "human" pathologists has become much closer A book on diseases of animals transmissible to man, therefore, comes at an opportune time, and will appeal to field as well as laboratory worker because it discusses the spread and control of such infections In this second edition (published 11 years after the first) Hull has enlisted the help of expert collaborators to revise some sections and to write others afresh The result has been to accumulate much interesting and exact information, not otherwise readily available The book deals with diseases of domestic animals and birds, rodent infections, human diseases spread by animals (sore-throat, scarlet fever and diphtheria), animals as passive carriers of disease organisms (the pathogenic sporing anaerobes), and the rôle of the common animals in the spread of disease There is little to criticise and much to commend For example, the virtual eradication of bovine tuberculosis in the United States is an achievement which has had too little publicity in this country where the obstacles are too easily regarded as insuperable The risk of spread of avian tuberculosis to pigs—the pigeon seems to be a common culprit—must not be forgotten Data are presented on anthrax as an industrial hazard, 36 pages are devoted to rabies, and the animal-man relationships in plague, tularæmia, leptospirosis, and the rickettsias are well described although more space might have been given to the rôle of animals and birds as reservoirs of the salmonella food-poisoning bacteria Psittacosis is quoted as a rare example of an animal disease which may be transmitted from man to man In the last chapter the results to man of his domestication of animals and birds are epitomised The book is beautifully produced and liberally sprinkled with maps and photographs

Treatment of Shock

R W RAVEN, F R C S , major R A M C , assistant surgeon, Royal Cancer Hospital (Free), London London Humphrey Milford, Oxford University Press Pp 96 5*s*

Major Raven has attempted to combine in small compass a critical monograph and a didactic textbook In a large measure he has succeeded in giving a clear and well-balanced account of our present knowledge of shock and its pathology Though he considers that the customary classification of shock into primary and secondary is not entirely satisfactory, he has—perhaps unwisely—used the old nomenclature, here was an opportunity for originality His descriptions are brief and to the point—though the illustration of the crush syndrome in the frontispiece suggests a simpler interpretation He holds three measures to be of paramount importance in the treatment of secondary shock elimination of noxious stimuli by preventing unnecessary movement, pain and loss of heat, restoration of fluid volume by transfusions of whole blood or plasma, and oxygen for prevention and treatment of anoxia About half the book is devoted to the treatment of oligæmia and anoxia and he emphasises that mobile transfusion units are needed as close to the fighting as possible The expert may quibble at some minor statements, but taken as a whole this little book fills a gap in the field of war medicine, and it is just the right size to be carried in the pocket

Child Welfare and School Medical Work

A Handbook for Assistant Medical Officers of Health
F J G LISHMAN, M D Lond , D P H , deputy MO for Devon London H K Lewis Pp 70 6*s*

THIS little book is made up of a series of leaflets originally issued by Dr. Lishman for the guidance of assistant county medical officers of Devon, many of whom were new to the work required of them He has wisely published them in book form for general use since owing to the war many assistant medical officers have to be appointed without previous experience of public health work and there is neither the time nor the opportunity to give them the usual introduction to their duties The book has another value in fixing what is the scope and limit of the public health officer's share in the province of personal medicine, those who read it without bias should be convinced that the individual public health services are ancillary and not in opposition to the work of family physicians

Year Book of Dermatology and Syphilology, 1941

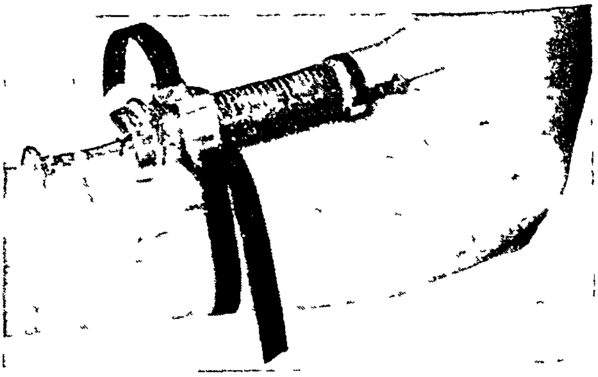
Editors FRED WISE, M D , MARION B SULZBERGER, M D Chicago Year Book Publishers, London H K Lewis. Pp 692 16*s* 6*d*

THIS handbook with its concise abstracts of the best articles on dermatological subjects published during the past year has as usual achieved a high level About a fifth of it deals with syphilis The introductory article by the editors is on seborrhœic dermatitis, and an attempt has been made to clarify the subject They give the lie to some old conceptions and unfounded statements that have been handed down from textbook to textbook thus they state that the *Pityrosporum ovale* is a saprophyte living on a seborrhœic skin, a soil which favours its propagation, and they consider that its rôle as a primary causal factor has not been established Similarly they maintain that there is no real evidence that seborrhœic dermatitis is contagious either by brush, comb or anything else This is almost certainly true The article finishes with a section on treatment containing many serviceable prescriptions

New Inventions

A "THIRD HAND" FOR INTRAVENOUS ANÆSTHESIA

IN keeping with the growing popularity of intravenous anæsthesia, particularly with 'Pentothal Sodium' (Abbott), various more or less elaborate methods have been described for continuous administration Many anæsthetists however prefer the simplicity of a 10 or 20 c cm syringe with the needle directly affixed, and for short operations this is satisfactory Not infrequently the anæsthetist's attention is diverted to support the jaw or to assist in moving the patient during administration In such circumstances the simple device illustrated has proved its usefulness



It consists of a strip of brass ½ in wide bent at a right angle and perforated at each end by a rectangular hole Each limb of the metal strip is covered by a small section of rubber tubing, the barrel of the syringe being held in the angle between them A piece of rubber from an old inner tube passes round the patient's arm and through the holes in the metal The rubber fits the holes tightly but when traction is applied to the ends it can be drawn through and released when the desired degree of pressure has been exerted

The manufacturers are Medical & Industrial Equipment Ltd , of New Cavendish Street, W 1, and Messrs. A C King Ltd , of Devonshire Street, W 1

I. W MAGILL, M B , D A

logy and psychiatry offers no such easy arrangement In present-day controversy some neurologists deny the validity of psychological conceptions, and psychiatrists counter by denying the right of neurologists to concern themselves with the subject, ascribing their association with it to the joint influence of tradition and a misleading nomenclature This difference appears to rest upon unrecognised, and therefore unexplored, metaphysical assumptions about body and mind, and offers little prospect of solution by any process of digestive assimilation It should not, however, hinder the cooperation of tolerant exponents of each specialty, for which the new department at the London offers an opportunity Psychiatry will be able to show its value in the daily work of the hospital, and here its scope is wide the psychoses can be demonstrated in those early stages that so often puzzle the practitioner, the recognition of a psychoneurosis will no longer mark the end of clinical interest in a case even if treatment offers practical difficulties, and, perhaps most important of all, the psychosomatic disorders we are now coming to recognise will present new opportunities for the advancement of clinical medicine

TREATMENT OF ULCERATIVE COLITIS

THE management of ulcerative colitis resolves itself in the acute or fulminating case into keeping the patient alive and in the more chronic progressive case into keeping him reasonably fit None of the specific forms of treatment tried out has proved universally effective, but certain general principles have been established STREICHER,[1] from experience with 912 cases, summarises the management of the acute cases as being mainly supportive, with rest in bed, small repeated blood-transfusions, a diet with plenty of protein and vitamins, including vitamin K, opium and hydrochloric acid by mouth, and parenteral injections of liver extract In chronic ambulatory cases a diet rich in protein and vitamins is again needed, with opium to control the frequency of motions, phenobarbitone to allay restlessness, iron, dilute hydrochloric acid and liver extracts for anæmia, and removal of any foci of infection It is sometimes advisable to begin treatment with a course of emetine, gr ½ hypodermically twice a day for four or five days, and of carbarsone in 4-grain capsules by mouth twice a day for ten days, even in the absence of dysentery bacilli or amœbæ, for occasional cases respond, as a few others do to vaccine therapy

As with all chronic diseases which tend to progress or relapse without apparent reason there are waves of fashion for certain remedies, and in the past few years trial has of course been made of the sulphonamide drugs On the whole the results with sulphanilamide so far published are disappointing, acutely ill patients may be considerably upset with vomiting, increased diarrhœa and abdominal cramps Benefit has been reported from sulphathiazole given in gr 15 doses every four to six hours for five to seven days Sulphaguanidine, being less readily absorbed from the intestine, produces a higher concentration in the gut without toxic effects, and in a few cases has been strikingly successful The new drug sulphasuxidine, which is even less readily absorbed, may prove more successful still Local irrigation of the colon with silver nitrate and antiseptics has been largely superseded by using colonic douches of normal saline or rectal injections of vitamin A such as is contained in 4–6 oz of cod-liver oil In such a chronic disease, liable to relapse, it is difficult to follow up cases to obtain an estimate of prognosis, of cases traced over years, about a fifth may be regarded as cured and another three-fifths show considerable improvement

It is in patients who become progressively worse in spite of careful conservative treatment that surgical measures should be considered The most accepted opinion is that if some drainage operation is undertaken an ileostomy is the one of choice On another page MAINGOT reviews the indications for surgery and discusses the various operations Local rectal states, fissure or abscess, and abdominal emergencies—perforation and obstruction—clearly need surgical intervention Acutely ill patients, whether primarily or in relapse, stand operation badly The mortality in these cases is prohibitively high, in cases where ileostomy is done after careful consideration a fatality of 20% is usual[2] MAINGOT's case, with most careful handling, responded to a terminal ileostomy by complete recovery of colonic tone and function so that bowel continuity could be successfully restored by anastomosis of the proximal end of the ileum into the cæcum This procedure, which cannot often be carried through, must leave the patient much nearer normality than does ileostomy with subsequent colectomy Yet KAHN and BAY[3] advocate total colectomy, done in three stages, because it completely disposes of the diseased bowel, results, they say, in no permanent damage to the patient and has a reasonable mortality (5 deaths in 51 published cases) In all chronic cases careful observations of the rectosigmoid by direct vision and of the motions must have demonstrated the absence of any active lesion of the colon before any relaxation of careful medical treatment or restoration of bowel continuity after ileostomy is allowed MAINGOT's final test of healing was to inject milk, albumin water, oatmeal gruel and finally decreasing dilutions of ileal fæces into the distal ileal stoma and to watch for signs of intolerance or a flare up—an obviously sound method

WHIPWORM AS A CAUSE OF SYMPTOMS

INFESTATION with *Trichuris trichiura* is almost universal in the tropics and is quite common in English country districts No systematic search for it is under taken because it is generally regarded as non-pathogenic In Ross's patient, described in our columns last week (p 97), the symptoms were chronic diarrhœa for five years, some abdominal pain, breathlessness and fatigue, the case was remarkable for the heaviness of the infestation, of which the numbers of dead worms—1000 or more—excreted after treatment were a measure The parasite is described as being resistant to most anthelminthics, Faust does not in his monograph[4] record treatment of whipworm infections with hexylresorcinol, and its successful use by Ross is thus an advance Diagnosis by means of the sigmoidoscope is also new, no one has reported seeing the parasite in the rectal mucosa before The method of infection seems fairly clear in his cases contamination of home-grown vegetables, especially of lettuces, by infected human excreta had served to provide the whipworm with hosts in three members of the family.

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[1] Streicher, M H, *J Amer med Ass* 1942, 118, 431

[2] Hopping R A and Bargen J A *Proc Mayo Clin* 1942, 17, 151, Lahey, F H *N Y St J Med* 1941, 41 475

[3] Kahn, M and Bay, M W *Surg Gynec Obstet* 1942, 74, 1087

[4] Faust, E C Human Helminthology, London, 1939

known men will vouch" During an Atlantic voyage Graham took nothing by mouth for five days but gave himself two gallons of sea-water daily by rectum He drank half a glass of water on the sixth day and some more on the seventh, but reported that this was not strictly necessary He claimed to have felt well and only slightly thirsty throughout Graham must have had an exceptional mucosa, for recent experimenters have failed to repeat his feat FOY, ALTMANN and KONDI[2] withheld all fluid from six volunteers of the South African Medical Corps for three days Three men served as controls while the other three had sea-water enemas It was found impossible to give more than 800 c cm of sea-water daily (four doses of 200 c cm) by rectum with any hope of its retention, but even this small quantity was more harmful than beneficial The subjective and objective symptoms of dehydration were much the same in the two groups, but there were great differences in the chloride conditions In the sea-water group the chloride concentrations in blood and urine and the total chloride excretion were greater than in the controls, showing that chloride had been absorbed The increased urine output more than counterbalanced the fluid absorbed, for the sea-water group lost more body-weight than the others Two of the sea-water group had lumbar pain An experiment on a single subject anonymously reported from America[3] supports these findings A young man was given sea-water enemas on the third day of a total fast, but each time he complained of colic and expelled fluid which was greater in quantity and more dilute than the sea-water given It seems then that, with possible individual variations, the rectum is no more selective in this way than the stomach

Yet there are plenty of aquatic mammals who spend their lives as in an open boat How do they manage? Their blood, it is true, is slightly more salt than ours, but it is still highly hypotonic compared with sea-water Seals in captivity, according to IRVING and others,[4] would drink fresh water greedily when they could get it but did not seem to drink sea-water By controlled feeding with herrings and by calculating the water loss from all sources—lungs, urine and fæces—they found that the account could be balanced from the water content and water of combustion of the food alone, and HOMER SMITH,[5] from observations on a seal periodically catheterised, agrees that only traces of sea-water are swallowed, even when the seal engulfs a fish under water SMITH is satisfied that the whale also obtains all its water from the microscopic marine organisms it eats, using its whale-bone comb as a filter from which it can lick off the solid matter when it has rejected the sea-water. LAURIE,[6] however, puts the whale's urinary chlorides at about 3%, compared with the average in man of about 1%, and KROGH[7] quotes an even higher concentration, so that the whale's kidney may do more than ours can to counterbalance a high chloride intake

What measures can the shipwrecked seaman take to eke out his fresh-water supplies? He loses fluid from the lungs, skin, urine and fæces He can minimise respiratory loss by reducing excretion to a minimum As regards skin loss, MELLANBY[8] recalls that many desert animals avoid desiccation by living in burrows in which the humidity of the air is high although the air outside is very dry The seaman can imitate them by erecting a tent for himself, or putting up his canvas hood if his boat has one, and keeping it soaked with sea-water, so that he lives in a saturated micro climate out of direct sunshine, while avoiding the exertion of bathing Urine and fæcal loss he can minimise by ensuring that his diet contains neither diuretics nor laxatives The diet should clearly be salt free, a high fat-carbohydrate ratio will produce most metabolic water per weight of foodstuff, but MELLANBY demonstrates that this is of little if any advantage One controversial suggestion that will no doubt be tested in the inquiries now being carried out is that the available water should be made isotonic by dilution 2 1 with sea-water, or even be made slightly hypertonic in hot climates where there will be an appreciable chloride loss from the skin It has yet to be shown, however, that this procedure is sound Another possibility worthy of inquiry is the value of vasopressin in ensuring maximal concentration of the urine, it has been shown[9] to produce a negative sodium and chloride balance in normal subjects, and in diabetes insipidus an injection of pitressin tannate in oil every day has proved as effective as injections of ordinary vasopressin every 2 or 4 hours[10] At any time, though, such speculations may be rendered superfluous by the production of a practical desalting apparatus, whether working by adsorption, electrolysis, distillation or chemical means

PSYCHIATRY AND GENERAL MEDICINE

THE London Hospital, which set up systematic lectures on the psychoneuroses some twenty years ago, has now appointed a psychiatrist on the staff, to work in the joint department of neurology and psychiatry, and the step will be welcomed by those who have striven for the recognition of psychiatry, in its modern form, as an integral part of clinical medicine The day is gone when the psychiatrist was only called in to decide when a man was insane, and when clinical instruction in the subject consisted of a few visits to an asylum and the viewing of some advanced cases of lunacy Psychiatry has now—after some resistance, we must admit—assimilated the teachings of psychopathology and applied them in the handling and treatment of patients who had hitherto been outside its activities A notable result of this development is to be seen in the Army psychiatric service, now organised in a way that fills with envy the few survivors of past battles and carried on by asylum-trained officers working in easy accord with others whose approach to the subject was, not so long ago, regarded by orthodox psychiatrists as a sort of burglarious entry The lion and the lamb have lain down together, and if the lion does devour the lamb it may be hoped that few will be disturbed by the happening thus metaphorically expressed, the provision of nourishment for the psychiatric lion may turn out to have been the proper function of the psychotherapeutic lamb The relationship of neuro period of treatment, but for none of these was the operation directly responsible 12 patients have required a subsequent thoracoplasty and in 5 more the operation is contemplated From the discussion it became clear that permanent closure of a cavity by suction drainage is rare (Monaldi claimed less than 20%) but reduction in size and temporary closure can be achieved in a large proportion of picked cases Sellors emphasised the importance of the supply bronchus, and so did Dr R J C Maxwell, who found in his series of patients at the Surrey County sanatorium that the prospect of a successful outcome varied inversely with the number of bronchi opening into the cavity When three or more bronchi entered the cavity, closure by suction drainage was impossible The operation improves the general condition of the patient by reducing toxæmia and reducing cough and sputum—it is, as Dr Peter Edwards said, the perfect cough mixture Closed suction drainage by reducing a distension cavity to reasonable proportions and by increasing the general health of the patient has proved a valuable, often indispensable preliminary to thoracoplasty Moreover, a more simple type of thoracoplasty may often suffice after preliminary drainage Nor is the method particularly risky, alarming hæmorrhage and infection of the chest wall are rare complications Suction drainage is still on trial but the results so far are encouraging

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[2] *S Afr med J* 1942, **16**, 113
[3] *J Amer med Ass* 1942, **119**, 307
[4] Irving, L, Fisher, K C and McIntosh, F C *J cell comp Physiol* 1935, **6**, 387
[5] Smith, H W *Ibid*, 1936, **7**, 465
[6] Laurie, A H *Discovery Reports* 1933, **7**, 363
[7] Krogh A, Osmotic Regulation in Aquatic Animals, Cambridge, 1939
[8] Mellanby, K *Nature Lond* July 4, 1942 p 21
[9] Smith, F M and McKay, E M *Proc Soc exp Biol N Y* 1936, **34**, 116
[10] Thorn, G W and Stein, K E *J clin Endocrinol* 1941, **1**, 680

SLUMBUG

THE devastation of towns and cities by aerial bombardment has this gleam of compensation, that many of the areas destroyed were squalid and overcrowded When we rebuild we shall have an opportunity of eliminating that reproach to civilisation, the slum But this elimination is not inevitable or even easy, only by taking thought can we avert the evils of the past A very persistent and troublesome characteristic of the slum is the bed-bug The spread of the bug into new areas depresses the standard of hygiene and drives away more scrupulous householders The bug is therefore actually one cause of slums, as J W. Munro pointed out in the past A vigorous campaign against the bug is necessary to ensure better standards of urban life in the future Meanwhile a special bug problem has arisen as a result of the war The bug has invaded a great number of air-raid shelters and was becoming a serious problem when the air-raids on this country died down If frequent raids are made in the future, it is certain that this trouble will recrudesce Attempts to extirpate the bed-bug have in the past been handicapped by lack of precise knowledge of the bug and of the best insecticides During the years 1935–40, however a concerted attack on the problem has been made by various experts coördinated by the Bed-bug Infestation Committee of the Medical Research Council The council have now published a report[1] summarising the results of the investigations The research was planned to solve questions puzzling practical men and the new information in the report will be useful to all those having to deal with bug infestations In section one, P A Buxton and C G Johnson present a picture of the growth of bug populations under field conditions[2] The great merit of this work is that the experiments were planned with special reference to the actual status, it is surprising how much of the previous research on the bug was made under unnatural laboratory conditions In this latest work there is a real attempt to bridge the gap between precise but artificial work in the laboratory and observations on uncontrolled wild bug populations One of the most interesting things which emerge is the difficulty which a bug population has in maintaining itself in an unheated room At winter temperatures bugs will not feed and a great mortality ensues In heated bed-sitting rooms on the other hand the population growth of the summer months is maintained far into the winter These findings are borne out by the constitution of samples of bugs taken from rooms at different times of the year J W Munro and A B P Page are responsible for section 2 which deals with the chemical properties of bug insecticides Most of this relates to heavy naphtha, a relatively new insecticide, and to hydrogen cyanide fumigation The complex mixture of substances in heavy naphtha invited research to determine the active ingredients In the course of this work some interesting new principles of toxic action were discovered The experimental cyanide fumigations were planned to define safe and efficient limits for this important method S A Ashmore and A W McKenny Hughes in section 3 describe the practical details of heavy naphtha fumigation and give a specification of the material It is claimed that heavy naphtha combines efficiency with complete safety, certainly it has the great advantage in war-time of being home-produced and inexpensive W C Gunn stresses the importance of domestic hygiene in section 4 Unfortunately there are some people too ignorant or too lazy to carry out proper cleansing measures In stimulating and assisting such people health visitors and sanitary inspectors can achieve a great deal In section five, G R Cameron deals with the toxicity to man of insecticides used against the bed-bug This is often difficult to assess because some compounds do not produce symptoms at once but only after long periods of frequent small exposures Moreover it is unsound to rely on only one kind of animal to predict the effects on man, several species of mammal have to be used The report ends with special instructions for preventing or curing bug infestations in air-raid shelters and there is an extensive annotated bibliography compiled by J Smart

BREAKFAST WITH THE BORGIAS

POISONERS have flourished since man first discovered that some changes in the internal environment are more than the living organism will bear Nor has the law hesitated to make use of this peculiarity of protoplasm Dr G Roche Lynch, addressing the Medico-Legal Society as its retiring president on July 16, quoted an early Egyptian papyrus where "the penalty of the peach" showed prussic acid to be a recognised means of liquidating malefactors The Greeks of course, used hemlock and he reminds us that the word "toxic" derives from τοξος—the bow which discharged a poisoned arrow In medieval England poisoning was so repulsive to the legal mind however that the statutory punishment for the poisoner was to be boiled in oil—a highly unfair arrangement since the tests for deciding whether death was due to poisoning were far from satisfactory Thus it was believed that a poisoned body—and especially the heart—resisted fire more successfully than one in which death had been natural Apart from the requirements of murderers and the law, the chief demand for poisons is to be found among suicides The Registrar-General's figures show that men prefer strong acids, cyanides, opium and coal gas, women choose oxalic acid (possibly because it is also handy for cleaning straw hats), phosphorus, the barbiturates and disinfectants Between 1921 and 1938, however about two-thirds of British suicides were compassed with carbon monoxide, and the preference for this gas is increasing As non-poisonous disinfectants become commoner the deaths from carbolic acid and lysol are falling, poisoning by opiates has been much reduced by the Dangerous Drugs Act, and the sale of barbiturates is partly controlled by the Pharmacy and Poisons Act of 1933, though these drugs are, in Dr Roche Lynch's opinion, still too freely prescribed by doctors Aspirin poisoning is

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[1] Report of the Committee on Bed-bug Infestation 1935–40 London H M Stationery Office Pp 64 1s

[2] See Busvine J R *Lancet*, 1942, i 453 (NB In that article the reference to C G Johnson's paper should be *J Hyg Camb* 1942 41, 345)

Annotations

VITAMIN C FROM PARSLEY

WATERCRESS, usually looked upon as the best of the salad vegetables as a source of vitamin C, is far surpassed by parsley, for Morgan[1] has found an average of just short of 280 mg of ascorbic acid per 100 g in nine samples of parsley leaves gathered in Cambridge this spring, whereas Olliver gives 61 mg per 100 g as the average figure for watercress Morgan therefore advocates a much greater consumption of parsley and rightly says it is both an easy and a decorative crop to grow in the garden Moreover it is available all the year round, though it remains to be seen whether the vitamin content is as large in winter On Morgan's findings 60 mg of ascorbic acid—the optimal daily requirement for a 11 stone adult—would be contained in about ¾ oz of parsley, a large handful, but no one would suggest taking the whole of their vitamin in this form It will be best to eat the fresh leaves, either in a salad or sandwiches, though Morgan found no loss of vitamin from keeping them in water for two days Chopping with a sharp stainless steel knife reduces the ascorbic acid content by 20% Morgan gives a recipe for parsley lemonade An ounce of picked leaves are pressed down in a jug, ½ a pint of boiling water is poured on and allowed to stand for 2 minutes, and the whole is then squeezed through muslin or calico This produces a cloudy, lemon yellow infusion containing 40–56 mg of ascorbic acid (equivalent to the juice of an average orange) and tasting only slightly of parsley It can be flavoured with, for example, one of the lemon substitutes

NUFFIELD RESEARCH AT OXFORD

IN view of the founding of the new Nuffield chair in social medicine, it is timely to recall the other Nuffield foundations at Oxford The old observatory, with its perfect lines and bland windows, houses the Nuffield Institute of Medical Research where Prof J A Gunn, the director, carries on his research in pharmacology and Dr A E Barclay, Sir Joseph Barcroft and Dr K J Franklin are continuing their study of the circulation by X ray cinema Apart from the institute, four of the Nuffield research departments—medicine under Prof L J Witts, neurosurgery under Prof H W B Cairns, obstetrics and gynæcology under Prof J Chassar Moir and anæsthetics under Prof R R Macintosh—are associated with the Radcliffe Infirmary, the department of orthopædics, under Prof H J Seddon, is at the Wingfield Morris Hospital The departments of neurosurgery and of gynæcology and obstetrics occupy new blocks of buildings, attached to the infirmary, with good wards, theatres, offices and equipment Medicine anæsthetics and clinical biochemistry share temporary buildings for their laboratories and treat patients in pre existing wards and theatres of the Radcliffe Infirmary Hopes of new quarters have naturally been suspended by the war The department of neurosurgery is closely linked with the Services through the hospital at St Hugh's College and the combined research on head injuries, and the department of orthopædic surgery is acting as one of the special centres for the study of nerve injuries The work of the research departments has been much affected by other war time changes It was intended that they should serve as training grounds for experts capable of taking up appointments elsewhere, and in this respect they have more than fulfilled their obligations, for each department has released a large share of its personnel to the Services For young research teams (the departments were only started in 1937) this has been a heavy loss, and, owing to the decision of the university to extend the education of medical students to cover the clinical years, the departments have had to undertake teaching responsibilities unforeseen at the time of their foundation The principle that a university should undertake the training of students while maintaining research is, of course, an old and good one, but the double obligation has perhaps fallen rather hardly on these young departments, founded primarily for research alone The scheme for giving a complete clinical training at Oxford was begun as a war time measure, and may perhaps end with the war, on the other hand it is a plan of such promise that if it can be thoroughly developed many would wish it to survive Should it become permanent it seems that the position of the Nuffield departments will have to be considered afresh If they are to be pre eminently research departments, the research beams must be released from those more exacting aspects of teaching which could be delegated to a less specialised staff, to train experts, however, will remain a natural function of the departments and one which they will be ready enough to fulfil

SUCTION DRAINAGE OF TUBERCULOUS CAVITIES

THE distension type of tuberculous cavity in the lung has proved singularly resistant to collapse therapy The work of Cairyllos and his colleagues, extending over the last decade, has shown that these cavities depend on a check-valve mechanism in the supply bronchus, due either to kinking or to tuberculous disease The partial obstruction allows air to enter but prevents its exit, and so leads to the formation of a very large cavity Secretions collect in it and atelectatic lung tissue, capable of reinflation, forms the wall The insertion of needles and even tubes into such cavities is not novel, in England, Pearson[1] has studied cavity pressures by such methods for many years, but it is only recently that Monaldi and others in Italy have devised a method for the successful drainage of these cavities This closed suction method was discussed at a meeting of the Tuberculosis Association at Oxford on July 3 Mr T Holmes Sellors outlined the technique of the operation For success, the layers of the pleura must be adherent over the cavity to be drained If a space is found when a pneumothorax needle is introduced some air is injected followed later by a sclerosing solution such as auri et sodii thiosulphas (*BPC*), silver nitrate or the patient's own blood As soon as the layers are firmly fused the site of the cavity is determined by screening the patient in the exact position that he will occupy on the operating table, and the chosen point of entry marked The risk to the operator's hands is too great for the operation to be performed under the screen The chest wall is locally anæsthetised and a fine trocar and cannula are inserted into the cavity, the correct depth being ascertained by manometric readings The anterior approach is preferred and healthy lung tissue can be traversed without risk As soon as the cavity has been reached the trocar is withdrawn and a barium loaded catheter with multiple side eyes is threaded into the cavity and allowed to coil up within it The cannula is removed and the tube attached to a suction pump Suction is maintained at 3–5 mm Hg continuously from the first post-operative day onwards for weeks or months An apparatus for suction drainage easily composed of materials to hand by anyone who can use a soldering iron has been described in our columns by Mr Arthur Edmunds[2] The tube in the cavity is gradually withdrawn under serial X ray control Mr Sellors finds that in favourable cases the sputum and secretions become negative for tubercle bacilli, and at the finish the size of the residual cavity, which may have been reduced to a mere fistulous track, can be estimated radiographically by running in some opaque oil through the catheter Sellors's results in his first 41 cases are cavity completely closed in 6 cases, considerable reduction in the size of the cavity in 27, no appreciable diminution in size in 8 cases, 3 patients died during the

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[1] Morgan, E J *Nature, Lond* July 18, 1942, p 92

[1] See *Lancet* 1941, i, 825

[2] *Ibid*, 1941, ii, 235

DIPHTHERIA IN INOCULATED PERSONS

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INOCULATION against diphtheria has been undertaken in Liverpool since 1925 and the results have been followed with some care The dispersal of population and disturbances following the outbreak of war have made this supervision much less satisfactory, and it therefore seems worth while recording the results obtained up to the end of 1939 in persons inoculated before the end of 1938

TABLE I—PROPHYLACTICS USED

Prophylactic	Date	Dose	Interval
MT toxoid	Oct 1925–May 1932	3 × 1 c cm	1 week to Jan 1932, 2 weeks thereafter
Toxoid antitoxin mixture (TAM)	March 1932–Dec 1933	3 × 1 c cm	2 weeks
Formol toxoid (FT)	June 1933–Dec 1935	3 × 1 c cm	,,
Toxoid antitoxin floccules (TAF)	May 1932–Dec 1938	3 × 1 c cm	,,
Alum-precipitated toxoid (APT)	Nov 1935–July 1938 Aug 1938–Dec 1938	1 × 0 1, 1 × 0 5 c cm 1 × 0 1, 1 × 0 5 c cm	,, 1 month

Five prophylactics were used during the period under review (table I) The small number of persons inoculated with toxoid-antitoxin mixture (TAM) have not been considered further and a few who received various mixtures of prophylactics have also been neglected The number of persons of various ages inoculated with each of the prophylactics is given in table II, with the number so inoculated who were subsequently infected with diphtheria

TABLE II—NUMBER OF PERSONS OF DIFFERENT AGES INOCULATED WITH DIFFERENT PROPHYLACTICS AND PARTICULARS OF DIPHTHERIA INFECTIONS IN THESE PERSONS

Prophylactic	No of persons inoculated			Total	Infections			Typed			
	Age—0–4 yr	5–9 yr	10 yr +		Cases	Complications	Deaths	Total	*Gravis*	*Intermedius*	*Mitis*
MT	800	1300	1021	3121	36	5	6	9	4	3	2
TAF	3029	17115	5869	26013	206	10	3 + 1*	131	72	43	16
FT	1425	1700	0	3125	20	1	0	19	13	5	1
APT	5537	17182	7	22726	134	11	1	132	79	34	19
All	10791	37297	6897	54985	396	27	11	291	168	85	38

* This patient received 1 dose of MT, reacted strongly and was given 2 doses of TAF

TABLE III—AGE INCIDENCE OF INFECTIONS IN INOCULATED PERSONS

Prophylactic	Age					Total
	Not known	0–4	5–9	10–14	15 +	
MT	0	6	17	12	1	36
TAF	4	2	118	69	13	206
FT	1	0	19	0	0	20
APT	0	12	119	3	0	134
	5	20	273	84	14	396
Fatal cases	0	3	6	2	0	11

In the infections of inoculated persons the percentage incidence of the various types was gravis 57 7, intermedius 29 2, mitis 13 1, as compared with the average for all cases in Liverpool in the period 1937–39 · gravis 45, intermedius 20 8 and mitis 34 2 The differences are statistically significant (D/SE gravis 4 3, intermedius 3 6, mitis 8 1) On the whole the cases are reported as very mild, but 27 showed various complications of toxic origin and there were 11 deaths The age-incidence of the infections in inoculated persons is as shown in table III

The intervals between completion of inoculation and infection in these cases are recorded in table IV No case which occurred within 12 weeks of inoculation has been included, since immunisation is unlikely to be adequate within this period

TABLE IV—INTERVALS BETWEEN INOCULATION AND INFECTION

Prophylactic	Interval between inoculation and infection (weeks)						Total
	Not known	12–49	50–99	100–199	200–299	300 +	
MT	0	8	3	15	7	3	36
TAF	*1*	*32*	*49*	*77*	*38*	*9*	*206*
FT	0	4	4	10	2	0	20
APT	1	50	53	30	0	0	134
	2	94	109	132	47	12	396
Fatal cases	0	2	2	4	2	1	11

Particulars of the fatal cases are given in table V

TABLE V—FATAL CASES OF DIPHTHERIA IN IMMUNISED PERSONS

Case	Date	Age (yr)	Prophylactic	Interval (wks)	Organism	Cause of death
1	1932	2	MT	30	Virulent	Circulatory
2	1933	4	,,	84	,,	,,
3	1934	4	,,	116	,,	,,
4	1935	6	,,	168	Intermedius	Paralysis
5	1935	8	,,	179	Gravis	Not known
6	1938	13	,,	354	,,	Circulatory
7	1933	7	MT + TAF	79	Virulent	,,
8	1935	10	TAF	120	Intermedius	Toxæmia
9	1936	5	,,	252	Gravis	,,
10*	1937	9	,,	217	Intermedius	,,
11*	1937	6	APT	46	,,	,,

* Sisters

DISCUSSION

The figures here presented do little more than place on record the experience of inoculated persons in the very heavily infected Liverpool area No Schick tests were done after inoculation and so these figures relate merely to persons who received one or other of the courses of inoculation recommended Large numbers of figures have been published from time to time as to the effect of such courses on the response to the Schick test or the antitoxin content of the blood, but few seem to be available on what really matters—the subsequent history of such children in relation to diphtheria infection By most persons the claim for complete immunity has of late been abandoned In this city it has been calculated[1] that the case-rate for uninoculated persons under 10 years of age for the years 1933–39 was 11 3 per 1000 per annum, while for those inoculated with different prophylactics it ranged from 1 5 to 3 Another interesting fact revealed in the same table is that in persons above the age of 10 years the diphtheria-rate is much the same in the inoculated as in the uninoculated

No doubt the diagnosis of some of these cases in inoculated persons would be open to question, but that also applies to many other cases of diphtheria What is clear is that there has been a not inconsiderable number of deaths among these patients The predominance of gravis and intermedius infections is well-marked and the risk of toxæmia correspondingly high, and in all fatal cases so far examined the infection has been due to one or other of these The list of deaths is, in our view, longer mounting, in spite of the quantity that must be taken; between 1936 and 1938 it accounted for 101 of 271 deaths from narcotic poisoning. Nicotine, used for fumigation by gardeners, is becoming popular with suicides; the lethal dose is minute and the action rapid. Strychnine is being given up though a few die-hards still swear by it. The ban on its sale for destroying vermin has been suspended during the war at the request of the farmers; less cruel methods are available, and Dr Roche Lynch hopes its use will be restricted again as soon as possible. Statistics of homicidal poisoning—for reasons beyond the control of the Registrar-General—are inaccurate. Probably only a proportion of murders by poison come to light. Dr Roche Lynch recalled that out of a series of 24 murders by poison, 8 were only discovered by exhumation, and that many poisoners have killed more than one person. The more cautious ones probably escape detection, but those who are apprehended show a strongly conservative spirit in their choice of drug. Arsenic has always been a favourite because of its small bulk, but large doses are sometimes vomited too soon to cause death, and several doses are often necessary. Opium can still be obtained in spite of legal safeguards, and Nurse Waddingham saved up a quantity which had been prescribed for dying patients under her care. Dr Roche Lynch holds that it is the duty of the doctor in charge of the case to take back any potent drugs from the nurse or family if the patient dies. Weed killer and industrial poisons like cyanide can be acquired fairly easily but attempts by a layman to buy an unusual poison are readily traced, and this limits the murderer's choice. A diagnosis of poisoning is seldom easy; sudden acute illness, he said, in a person in good health or stationary bad health is suspicious, and so is a sudden atypical change of symptoms. It is always worth noting if the patient complains of a change in the taste of food, drink or medicine. Bacterial or accidental food-poisoning usually affects all or nearly all who share in the food, whereas the murderer chooses his occasion to poison one victim. Recovery from poisoning is surprisingly rapid compared with that from most natural illnesses. If the doctor suspects poisoning while the patient is alive he is in a difficult position, but he can approach the Home Office with a request for analysis of a specimen. If he cannot get the patient into hospital he should employ a trustworthy nurse and confide in her so that she can be on her guard, and prepare all food and drink for the patient herself.

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[1] Report of the Medical Officer of Health of the City of Liverpool (1939) 1940, p 27 Table IX

MEASURING IMMUNITY TO SMALLPOX

The smallpox outbreak in Glasgow has brought home to us how little is known about the degree and duration of resistance which vaccinia produces to this dread disease. In face of an outbreak of diphtheria, the Schick test can be used to separate the susceptibles who need protection from the immunes who can be left alone. But when smallpox appears all likely and many unlikely contacts are vaccinated, and those who do not "take" are left with the uncomfortable feeling that they may or may not be immune. A method that would measure resistance to smallpox would therefore be a great boon. When Hirst[1] published his discovery of the agglutination of chick red blood corpuscles by the influenza virus, it was natural to inquire whether other viruses had a similar property. In the course of such an inquiry, Nagler[2] found that vaccinia virus also had an agglutinating action on fowl red cells, and that, as was the case with influenza virus, the agglutination could be specifically inhibited by anti-vaccinia serum. For the test he used vaccinia virus grown on chick chorioallantoic membrane, which agglutinated a 2% suspension of fowl red cells to a dilution of 1/256; virus grown in the yolk-sac was ineffective, and the cells of certain birds, particularly older birds, reacted poorly. Using the serum of an immunised rabbit as standard, Nagler showed that vaccination with egg-virus raised the titre of a patient's serum from 0·025 unit before vaccination to 0·05 unit at 12 days and 0·4 unit at 21 days and 28 days after vaccination. A test like this which can measure the degree of resistance obviously has a variety of uses. It can assess the relative antigenic value of egg, calf or otherwise produced virus, discover whether two or more insertions are more effective than one, and perhaps determine the potency of different virus preparations. But its primary use will be to decide whether or not to vaccinate when smallpox is about.

SWAPPING PATIENTS

Doctors are scarce and so is petrol, and it is no longer proper for practitioners to travel far afield to see patients who could well be visited by a doctor who lives nearer to them. Accordingly insurance patients are being re-allocated, with the consent of the doctors concerned, for the duration of the war "so as to secure economy in the use of civilian medical man-power." But there is some doubt whether under the protection of practices scheme a doctor has the right to transfer to another practitioner patients assigned to him by a colleague absent on war service, without written consent—which in these days of disturbed communications may be impossible to obtain. To meet this difficulty the Ministry of Health has issued an enabling regulation investing the deputy with the rights of a principal over these temporary patients and no longer requiring him to insert the name of the absent practitioner on any certificate or document issued in respect of his patients. Presumably the absent practitioner will no longer be responsible for the acts or omissions of his deputy. The BMA have made similar proposals—popularly known as the five mile limit plan—for the temporary reallocation of private patients, but the experienced family doctor is not finding it easy to break the ties of a lifetime at the call of a measuring tape.

UNITED SCIENTISTS

At a reception on July 23, given by the Royal Society of Medicine and the British Council for medical and scientific representatives of the united nations, Dr A. M. H. Gray made his large and cosmopolitan body of guests feel the warmth of their welcome. Sir Henry Dale, with his wide contacts in science at home and abroad, was able to give perspective to the hopes and aims of all those present, and Lord Snell spoke of the better uses to which we may hope to put science when it takes off the harness of war. Till then, as the professorial staff of the Gorky All Union Institute of Experimental Medicine declared in a telegram of greetings received the same day by the Physiological Society, "We must pool our creative desires to form a fund of scientific achievements" which will help us all to speedy victory. In his reply Prof. A. V. Hill looked forward to a lasting brotherhood in scientific service.

A MISWORDED ADVERTISEMENT.—Several correspondents have expressed surprise at an advertisement for a locum tenens in our issue of July 18 containing the proviso "Aliens and Jews need not apply." The intention of the advertiser was to signify that owing to the nature of the practice a doctor of British nationality was essential. We deeply regret that through an oversight the advertisement was allowed to appear in such form.

" A mass X-ray examination of 98·4% of the people in Stuttgart resulted in 7500 being suspected of tuberculous infection. A further examination of these confirmed the diagnosis in 3444 cases (i.e., 0·76% of the population), 737 had a progressive tuberculosis requiring treatment, of which they were ignorant, and of these 182 cases were open."—From *Bodensee* for April 6, 1942.

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[1] Hirst, G. K. *Science*, 1941, 94, 22.

[2] Nagler, F. P. O. *Med. J. Aust.* 1942, 1, 281.

jump up and lick my face. So I smile, and with a courtly little bow invite him to precede me. “Oh, thank you thank you,” he pipes and squeezes by. His voice is gummy from long disuse. Aha he has found an old crony and is eagerly sidling along the pew towards him. That's good. I always seem to collect funny inarticulate people around me and there they are apt to hang for hours and hours. But I'm glad I risked being nice to the little grey-haired man. My little moment of Goodness. Now whom shall I sit next? This coloured gentleman doesn't look too communicative. He'll do.

Why does one come to conferences? I was looking forward to meeting Francis Flute the sanatorium superintendent, and Snug the thoracic surgeon but they haven't turned up. I ought to have made sure first. I survey the rest of us filing in. More than half have their eyebrows fully raised and a good third have their mouths ajar. My God we look positively frightening in the mass. Come come I'm not usually so misanthropic. Why is it? Those baked beans, unless I'm mistaken. The chairman calls on the speaker Bully Bottom the Weaver of Plausible Non-Sequiturs. No that's a bit unkind. Let us say the Voice That Breathed O'er Brompton. We stamp our feet. The blinds rattle down at a touch of a switch. We snuggle down for a little light hypnosis as the dazzling rectangle splashes on to the screen. ‘The first slide shows ’ and all our eyes converge on the pointer's tip and follow its wavy course like the hen's along the chalk line. The fug deepens. Click, a second slide. Well *I* can't see any difference. The coloured gentleman is breathing very deeply. Bit of yoga to pass the time? Tobacco smoke swirls in the lantern's beam. The pointer relentlessly collects our eyes and shows us what differences we ought to see. Of course I see now. All the same I wish the two slides could be shown side by side. I can't help feeling there's a catch in it somewhere. What's he talking about now? Contraceptive collapse? It CAN'T be. Oh contraselective collapse. He shouldn't talk with his mouth full. More murky slides. If ever I address the mob I'll show my slides demonstrating the marvellous effect of my patent cure in the reverse order. They would never notice. Not they. He's finished. We stamp our feet. Now for a cup of tea and two biscuits, price fourpence. No damn, there's still the discussion. I do want my tea. Somebody gets on his feet and talks. He hasn't been listening either but that doesn't deter him. He seems to be extolling green vegetables. I must say old Bottom takes these irrelevancies very well. Just goes on lighting his pipe. His answers to the points raised are statesmanlike and noncommittal. In fact they don't mean a thing. Now for some tea. Quick. I must edge away from old Bottom who seems to be making straight for me. Too late. Oh what am I to say? What *am* I to say? ‘Those seats are so damned hard I haven't had a wink of sleep.’ He grins satisfied, and I breathe again. I have had my little moment of Truth and got away with it.

* * *

Sometimes after a long afternoon round I come in for a late tea and listen to the 6 o'clock news. However gripping, if I shut my eyes the same sequence occurs. I feel I can listen just as intelligently, then I hear the words and don't get the picture then I turn the noise into a pattern, and then disregard it. But these layers of consciousness don't end here—there are hundreds of them. One of the top ones is the parody layer where what you have just been doing or seeing is made grotesque. There are the childhood layers of sentient glamour, the feeling of being in the shrubbery as it is getting dark, the adventurous feeling of a packet of sandwiches and a whole enormous day in front of one. Then there are the adolescent layers, the one of prowess where one plays rugger sublimely, dodges, swerves, feints and finally dives over the line for a glorious try (the Freudians would say this is the memory of the spermatozoon's struggle to reach the ovum). Some of these layers are unpleasant—the examination dream of ignorance and inarticulateness, or the badly dressed dream in a room full of fashion-plates. There are several debating layers, where one argues cleverly and interminably, but not in words or about anything in particular. I don't know whether the personal layers are all together or scattered among the other strata, but there is one for each person whom one has known intimately, especially those people in whose presence one was completely happy without talking. Du Maurier's “Peter Ibbetson” deals with one of these personal layers. By trying to remember what went before and after each dream and sometimes succeeding, one might be able to sketch out the various strata. Would one find it was chronological, the older memories deeper down? Or utilitarian, dreams being Nature's escapist literature, that type being supplied which is most needed, like the rejuvenating childhood memories in senility? Sometimes one flits past many layers—has a glimpse of a dream of a few nights ago, a word or two with one's grandmother, and finally settles in some deep stratum of amœboid content. I by no means rule out the possibility of telepathy playing some part in fixing a dream at a certain stratum. This geology of dreams would form a useful subject for a team of investigators, not psychologists, they know too much and have preconceived notions on the subject, but people like myself, village doctors. We might even find a drug which would fix one's dream at a particular stratum. “You want to dream about——? How long ago was that? Twenty-two years. Let's see (consulting the sliding scale), that'll be tri-bozo-barbiturate.” At any rate I have found that the small amount of morphia in tinct. camph. co., or the codeine in two ‘Veganins’ give me coloured childhood dreams while aspirin dreams have a black-and-white, metallic, practical quality.

* * *

George the blacksmith who periodically shoes my mare is undoubtedly the best-loved man in the village, largely because he unobtrusively exhibits most of the Christian virtues. He is perennially cheerful and friendly, helpful and merry-eyed. He enjoys his pint of ale and spoils the evacuated children who are always in and out of his shop and never rebuked no matter how much they get in his way or tamper with his tools. He and I have frequent talks about the bad times by which we mean no more nor less than the modern practice of tarring road-surfaces which makes them slippery as glass under a horse's feet. In the course of our conversations George frequently quotes one Perkins whom he thinks I know; as a matter of fact I don't and haven't the courage to say so at this late date. Perkins, it seems, is a sort of super-horsemaster, an oracle who is not, however, regarded by George as necessarily infallible. Thus, although “Perkins always says” is a frequent opening remark, it is often followed by “but I thinks meself.” George and I thought that one frost-nail tacked into each shoe might make the mare less liable to slip. We tried it and we were right. “Now Perkins 'ud 'a putt een a larger nail,” said George, “but I likes these yur small wans.” So do I. Indeed, I'd back George's opinion against Perkins's every time.

* * *

He is 75, still in active practice and keenly interested in the future of medicine. He is a general practitioner-surgeon of considerable local repute and still enjoys tackling emergencies on the kitchen table. “One day last winter,” he said, “I was asked by a neighbouring doctor to see a big fat farmer with an acute abdomen. When I got there all I could see was a great mountain of belly rigid as a board. We fixed up some planks on a couple of trestles, the doctor gave the dope and the only other help we had was a gamp. I don't like gamps, they aren't clean, so I herded this one into a corner away from my instruments where she could do no harm. I made my incision, turned round to pick up a pair of Spencer Wells and caught my head the most almighty crack on a low beam which nearly put me out. However, I recovered and for the rest of the operation remembered to bend double each time I turned round to pick up another instrument. I didn't do too much. I put in a tube and got out. He did all right. Just as I was sewing up I happened to look out of the window and there I saw old X (another doctor in the neighbourhood) hunting his hounds across the field at the back of the house and blest if they didn't kill there. I went out to have a word with X. ‘And what the hell are you up to?’ I asked. ‘Just killed a fox,’ he said, ‘and what have you been doing?’ ‘Just saved a man's life,’ I said. ‘Which of us has done the best morning's work?’ ‘I dunno,’ he said. ‘Nor do I,’ said I.” Nor do I.

than it should be. It is noteworthy that 6 of the 11 deaths recorded occurred in persons inoculated with the prophylactic MT toxoid. This was one of the earlier forms of formol toxoid, and was found early in 1932 to be unsatisfactory on other grounds, particularly because it gave a very low Schick-conversion rate in a series examined. It seems clear therefore that some of these failures may be attributed to the use of an unsatisfactory prophylactic. The last 2 cases mentioned in table V are of interest in that they were sisters and had been inoculated with different prophylactics; they might well be an instance of a strain of human being difficult to immunise, for the attacks were of a most fulminating type, and rapidly fatal. As mentioned above, no Schick tests were done in any of these cases and it is highly probable that some of the failures in immunisation would have been demonstrated by such a test. Excluding the group of inoculations with MT toxoid it seems that one uncontrolled series of inoculations has reduced the risk of infection with diphtheria in this heavily infected environment to somewhere about $\frac{1}{10}$ of that of the uninoculated person; the risk of death is not entirely eliminated but is reduced to something like the same extent, for the case-fatality in this small series is 1·39% (excluding MT cases) while that of the intermedius cases as a whole in Liverpool is about 10% and of the gravis cases 6·5%.

The response of the people of this city to the offer of inoculation free of cost has been most disappointing. As a result of efforts up to the end of 1939 some 60,947 persons had been inoculated.[2] Of these, 4976 were at that date less than 5 years old, 26,089 aged 5–9 and 29,852 aged 10 and over. On the basis of the 1931 census figures, this means that 6% of the children under 5 years were inoculated and 31% of those aged 5–9 years. These proportions would be expected to be inadequate to affect the incidence of diphtheria significantly, and there has in fact been no evidence of any decline of diphtheria incidence in the city.

SUMMARY

In Liverpool during the years 1932–1939 there were 396 cases of diphtheria with 11 deaths in 54,985 inoculated persons; 6 of the 11 deaths occurred in persons inoculated with what appears, on other grounds, to have been an unsatisfactory prophylactic.

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[2] *Ibid*, p 26, table VIII

MEDICINE AND THE LAW

Mistake of a Decimal

A FATAL misunderstanding as to the strength of an anæsthetic led to a claim for damages against the doctor who was acting as honorary anæsthetist to the hospital where the operation was performed. Mr Justice Lewis, at the recent Hampshire Assizes held that the mistake did not amount to negligence. Mr Alfred Fussell was suing Dr J R J Beddard, alleging that he had been negligent in administering an overdose. The plaintiff's case was that, Dr Beddard and the surgeon having decided to use 'Decicain,' Dr Beddard had asked the hospital sister for a "one per cent solution"; the drug was in a bottle labelled "one per cent solution"; the sister, it was said, held up the bottle with the words "One per cent solution—is that right?" Dr Beddard gave evidence that he had decided to use a 0·1 per cent solution and that he asked the sister for a "point one per cent solution." The judge, while expressing sympathy with the husband of the dead woman, found himself unable to treat the misunderstanding as establishing negligence on the anæsthetist's part. The sister had the highest qualifications and everyone was accustomed to rely on her. Nor did he think the sister was to blame in the sense of being negligent in law. Judgment having been given for Dr Beddard with costs, the latter's counsel intimated that the defence would not ask for costs—a sympathetic course which the judge approved.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—At a meeting of the college held on July 21, with Dr Charles McNeil, the president, in the chair, Dr William George Clark (Edinburgh) was elected to the fellowship.

In England Now

A Running Commentary by Peripatetic Correspondents

I AM rather bitter about all this medical planning mainly because my own pet scheme of country instead of slum hospitals is obviously getting the worst of it. My only consolation is that I have the support of one of our most eminent hospital architects. Frankly, I have not yet heard a single sound reason against the country hospital.

It would be inconvenient for Harley Street? Possibly, but having been so inconvenient to everyone else for so long it is time Harley Street gave way to the convenience of the profession as a whole as well as patients. No one suggests that each hospital should not have a town centre for the treatment of outpatients and local emergencies, and in this centre the consultants could have their consulting-rooms, a move which would do them a world of good since it would stop the Harley Street ramp once and for all; a genuine consultant would possess an address which could not be acquired merely by being able to afford the rent. The advantage of cutting overhead expenses and of living in comfort rather than ostentatious discomfort is also not to be overlooked.

Students would not like it? How many medical schools have ever consulted their students on this point? I am tired of the fashion of condemning students when their views do not coincide with those of authority and using them for propaganda when it suits authority's purpose. Students are like children (and monkeys) in their suggestibility, and if led aright can be persuaded to support almost any scheme that is not wholly irrational. I suspect that the more thoughtful of our students are in favour of country hospitals; the vast bulk (i e, the unthinking section) have no views on the subject and would be equally happy in country or town, but when their teachers come down dogmatically on the side of the town hospital they automatically accept this view as their own.

Patients would not like it? Says you. Of course they are going to dislike anything that is new and put forward in an apologetic way. But our country hospitals are not going to be at the back o' beyond. They will be within easy access of London; they will be near either a railway station or a bus route, or a special 'bus service will be run from the nearest railway station on visiting days and there will be a hospital brake to fetch the relatives of dangerously ill patients at any time of the day or night. Extra expense? Negligible compared with the total cost of the hospital and could well be met out of a fraction of the money saved by rebuilding the hospital on a country site instead of in the centre of a town.

No, I refuse to believe that this vitally important question has been tackled impartially. Our honorary staffs (most of them at least) have approached it with preconceived notions. I challenge anyone to produce an iota of evidence that the sick person will not recover quicker and more surely in rural surroundings with ample fresh air, the maximum of sunshine and at least a modicum of natural beauty around him.

* * *

Why does one come to conferences? That lunch was calculated to make one downhearted and flatulent for the afternoon. I suppose we'd better be getting back to the lecture-theatre. The university drowses in heavy sunlight. The distant river sparkles invitingly. We pass two white clad girls playing tennis. Indifferent tennis, but the farther one moves like a Baronova. I'd like to sprawl under that tree and just watch her through half-closed eyes. I know she is going to haunt me for the rest of the afternoon. What sadness! Well, at any rate I have had my little moment of Beauty.

We leave the sunlight and swarm through dim chilly corridors. This place has the "thrilling-sweet and rotten" smell of a physiology lab, where alcoholic libations are poured out to the wrong gods. As I approach the swing-doors into the theatre I almost collide with that timid little man with the grey hair, who doesn't seem to have anyone to talk to and looks as if he wishes he had. I'd like to pat him over the shoulders and say, "Good old boy, then," but I'm afraid he might more than one occasion he had referred to the lack of suitable personnel both for the number of tribunals required and for the additional work which would fall upon his department The position in this respect is daily becoming more difficult, and the necessary staff could be obtained only by diverting to this ork persons at present engaged upon, or available for, work of mediate national importance

Consideration has also been given by the Government to the ggestion made by Mr S Silverman that pensions appeals ould be heard in the county courts, but, apart from the fficulty which the judges would have in undertaking this rious addition to their already heavy labours, the suggestion d not find favour with any of the bodies consulted as representing the interests of the persons concerned Sir W omersley had discussed it not only with his central dvisory committee, but also with the British Legion in ngland and Scotland and with the Trades Union Congress on ehalf of civilian claimants to whom a right of appeal would o doubt be extended Each of these bodies expressed a strong reference for the proposal to wait until it is possible to set up ibunals on the old lines

He was taking full advantage of the arrangement under which ases where there is serious doubt or difficulty on a medical uestion can be referred to an independent expert nominated y the president of one of the Royal Colleges In no case had e rejected the opinion expressed to him by one of these experts —Sir I Fraser Since the Minister cannot go the whole way, ill he not meet the demand in this House and in the country o the extent of placing these medical referees under the pay nd direction of the Lord Chancellor instead of their being nder his pay and direction ?—Sir W Womersley The edical referees are entirely independent of my department nd are under no pressure from me I do not think any lternative system to that of asking the presidents of the Royal olleges to make these nominations would be more satisfactory —Sir I Fraser Is it not a fact that, whereas the residents of the Royal Colleges of Surgeons and Physicians ominate these medical men, it is the Minister who takes the xecutive action of appointing them, and it is he who pays hem ?—Sir W Womersley I accept the nominations of the two presidents without question I do not ask them to send someone else, I accept whatever nominations are made These independent medical referees are entirely independent of my department

M R C Report on Silicosis

Mr James Griffiths asked the Minister of Fuel and Power if he could indicate the steps he proposed to take to implement the recommendations made by the Medical Research Council's committee on silicosis among coalminers —Mr T Smith replied As regards the improvement and wider application of preventive measures at the mines chiefly affected, which are in South Wales, the Minister has made proposals to the Monmouthshire and South Wales Coal Owners' Association and the South Wales Miners' Federation, which they have promptly accepted, and these are now being put into effect They involve the appointment by each association of a small committee to work and take action in collaboration with the two divisional inspectors of mines along the lines of procedure which are already being followed with good results in the anthracite area The extension of rights of workmen's compensation is a matter for the Home Secretary and his proposals will be communicated to the two sides of the industry before action is taken Mr Smith added that the M R C report proposed to alter the word "silicosis" to "pneumonoconiosis," and therefore there would be some old cases to which consideration would be given

Treatment of Tuberculosis

Sir Ernest Graham Little asked the Minister of Health whether he was aware that while the increased incidence of tuberculosis in females of the age group 15–25 was maintained, there was a sharp rise in two new categories—children under 5 and inmates of mental hospitals, whether he could now report what suggestions the Medical Research Council had made to explain the rise in the first category, and whether he had any explanation of the rise in the two new categories cited —Mr E Brown replied The points referred to will be dealt with in the report on the inquiry made by the Medical Research Council, which I am expecting to receive shortly

Dental Treatment for Young People

Mr K. M Lindsay asked the President of the Board of Education whether he would encourage local-education authorities to provide continued dental treatment for young people who have been regularly inspected and treated while at school and who now belonged to youth organisations —Mr R A Butler It is open to doubt whether local education authorities have power to provide dental treatment for young people who have left school and belong to youth organisations I realise the importance of this matter, but am bound to say that the shortage of dental officers, due to the demands of the Services, would make a general extension of the school dental service impossible at present —Mr Lindsay Will the Minister look at the scheme at Cambridge and at Guildford, where they are in fact putting this into practice ? —Mr Butler That is not under the powers which I would like to see but which do not exist It is under other powers

Vaccination

Sir Waldron Smithers asked the Minister of Health whether, in view of recent developments, he would take the necessary powers to make vaccination against smallpox and injections against other infectious and epidemic diseases compulsory —Mr E Brown replied I am advised that recent occurrences have not afforded any justification for such a change of policy as is suggested, but I shall continue to do all in my power to encourage immunisation against certain infectious diseases, either as a routine or when special circumstances call for such action

National Bread

Sir E Graham-Little asked the parliamentary secretary to the Ministry of Food (1) whether he was aware that the Lambeth borough council had asked to be relieved of their duties as food and drugs authority under the Food and Drugs Act, 1938, in so far as national bread and national wheatmeal were concerned, in consequence of the persistent refusal of the Ministry of Food to furnish a specification of national bread requiring a standard indicating maximum fibre content, minimum vitamin B_1 content and minimum oil content, in the absence of which the council found it impossible to state a legal case before a court, and whether he would amend the specification accordingly, and (2) what arrangements were in existence for testing whether the flour as it came from the mill was in accord with the specification laid down in S R & O 451, 1942, whether testing is carried out by officers independent of the milling industry, what punitive measures are taken when the flour is found not to comply with the specification, whether any definite proportion of the wheat germ is required to be incorporated in bread sold as national bread, and what is the average proportion of germ actually supplied —Mr W Mabane replied I am not aware of the circumstance mentioned in the first question The answer to the last part of that question is no As regards the second question, detailed particulars of the weekly production of flour mills in the United Kingdom are checked by my department to ensure that 85% extraction is being obtained in the milling of national flour Samples of national flour are drawn by mill inspectors employed by my department on all visits to mills These samples, which are drawn from bulk stocks, are sent to the laboratories of the Research Association of British Flour Millers at St Albans which, for the period of the war, are being used by my department, and where examination of flour and bread samples is made by one of the Ministry's scientific advisers Non compliance with the specification would be an offence against the Defence (General) Regulations and as such punishable by imprisonment or fine or both In the event of any infringement, the usual enforcement procedure would be applied In so far as the fourth and fifth parts of the second question are concerned, I would refer to the definition of national wheatmeal contained in S R & O No 451, 1942 The average proportion of germ in national bread cannot be stated precisely, but it is the maximum having regard to the technical considerations involved

Rank of Recalled RAMC Officers

Sir Alfred Knox asked the Secretary of State for War whether it was his intention that medical men who served in the last war in the rank of lieutenant or captain, Royal Army Medical Corps, should now be called up at the age of 41 to 46 years and posted to serve under youths of 25 to 30 years of age, who only received their medical degrees a few months ago —Sir James Grigg replied Medical men called up for service who held commissions in the RAMC for a year in the last year are gazetted captain from the date of joining Few RAMC officers under 30 are commanding units, and these are in all cases field force units with active duties, to which it is not intended to post the 41–46 year old officers

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M P

WHEN Mr Ernest Bevin opened the debate on the administration of the Factories Acts last week he not only surveyed the present conditions and the improvements which have been introduced in war-time but hoped they would continue in peace-time, and be "of lasting benefit to the community" Mr Bevin is thinking of the structure of postwar industry, "nearly everything," he said, "which has been done [to promote the war effort] can be continued to the great advantage of peace-time industry" The main points of the speech were (1) the assumption by the Government of greater responsibility for the welfare of the worker, (2) communal feeding in factories and (3) the development and intensification of medical supervision and nursing services in the factory It was necessary the Minister said, to have government responsibility for welfare (and this would apply to the other points) because "we must not have a kind of industrial feudalism growing up in war" To the communal feeding organisation, this time by factory plus mobile canteens, Mr Bevin attributed the return to work in 14 days of 77,000 people out of 80,000 blitzed in Coventry and the restoration of full-shift work at Liverpool docks, after blitzing, in 3 days He wants factory canteens to be permanent

One of the main functions of the Factory Department, said the Minister, is the prevention of injury and of bad health There has been an increase in the accident-rate during war "owing to the very large recruitment of inexperienced workers" and there has been an expansion of the more dangerous industries But by giving close and continuous attention to all problems of skin disease—the Minister was referring to industrial dermatitis—the percentage rate is low, almost below the normal The House was told that many employers looked with great disfavour on the introduction of the works doctor but nearly all those who have introduced doctors will now admit it was a wise step to take

Absenteeism has been reduced, said Mr Bevin, "owing to the fact that a doctor and a nurse are on the job", and "the cooperation between the works doctor and the general practitioner has shortened illness enormously and in cases of accident it has meant quick attention" The works doctor has been of great service in organising first-aid arrangements and keeping them efficient, in looking after workers exposed to special risks, and in attending to the special problems affecting juveniles and women and "their cooperation with the private doctors and local health services has made the general service more readily available" Mr Bevin said that whole-time doctors have increased from 35 to 150 during the last two years This is a small number, and the suggestion made later in the debate that more retired and semi-retired men and more women should be employed merits consideration As also the suggestion that the panel doctor attending workers should be asked to take on factory duties where possible The Minister could not resist saying whimsically that if there were enough doctors for every little works it might perhaps be bad for us "We must not have too many doctors if we are to survive", on which Dr Haden Guest interjected that he hoped it would not be necessary to report the Minister to the BMA and Mr Bevin rejoined that his union was nearly as good as my honourable friend's The number of part-time works doctors has increased from 70 to 550 and the ministry have sought to expand the factory nursing service as rapidly as possible

Hours of work is a vexatious problem and Mr Bevin admitted that after Dunkirk there was for a time a strain on the Factories Acts administration that might have led to a breakdown Happily a check was imposed though he had been forced to permit things which were distasteful to him, such as agreeing to let young people work 60 hours in the week But now our man-power has been mobilised to such an extent as to justify the Minister in tightening things up at an early date He is now taking steps to prevent the employment of young nomads in the building trades—which for the first time have been brought under the factory department—and the special order allowing long hours of work in the cotton trade is to end with August Registration of young people should help us to give our young workers a better deal in the future

Later in the debate, Sir Geoffrey Shakespeare, chairman of the Medical Priorities Committee, stated, in answer to a question by a medical MP, that he had had consultations with Mr Bevin on the question of increasing the supply of doctors for factory work Mr Ellis Smith, speaking for the Labour Party, laid special emphasis on the need for the establishment of rehabilitation centres, and referred to a visit he had paid to that at Mansfield, established for the benefit of coalminers He asked for the working out of a national comprehensive scheme of rehabilitation as soon as possible

Despite the Minister's statement on the fall of absenteeism, Mr Simmonds, a Conservative member for one of the Birmingham divisions, purported to show that there had been an increase of absenteeism in June This increase Mr Simmonds, who is himself an employer, ascribed in part to medical men not being "as careful as they ought to be" in issuing certificates for absence, he proposed that the Minister should go very carefully into the matter with the medical authorities Another Birmingham employer raised the same point against doctors and read a number of certificates which he alleged were unsatisfactory On challenge a medical member offered to read the documents, if sent to him, and give his considered opinion In winding up the debate the Parliamentary Secretary to the Ministry (Mr Tomlinson) had not time to deal with these medical charges except that it seemed possible one of the certificates referred to was "a sort of forgery" While this question of certification will no doubt be explored, the medical conditions are good, absenteeism is declining, and health organisation will continue to improve

QUESTION TIME

Health in Occupied Europe

Mr Dingle Foot, parliamentary secretary to the Ministry of Economic Warfare, informed Mr Edmund Harvey that the worst conditions in German controlled Europe continued to prevail in Greece, in some parts of Poland and in occupied Russia There could be no doubt that deaths from starvation had occurred in these territories In the Greek cities, however, there had been an improvement, as a result of the shipments organised by the Allied governments The situation was not comparable in the other occupied countries, although it was broadly true to say that the urban populations were living at a level which was below, and in some areas substantially below, peace time standards Shortages of meat and fats were specially marked in the urban districts of Belgium and France The standards of public health did not appear to have been seriously affected in most other European countries But in Belgium and France there had been an increase, during the past two years, in the incidence of certain diseases, notably pneumonia and tuberculosis The insufficiency of the diet was no doubt one of the principal causes of this increase By agreement with H M Government purchases inside the blockade area were still being made for the benefit of Allied peoples Accordingly, over the last 13 months the Belgian government had made purchases of indigenous Portuguese foodstuffs, which had been sent to Belgium We had also made it clear that we would welcome the continuance and expansion of the scheme under which Belgian children whose health had suffered, were sent to Switzerland, and we had always been willing to grant additional navicerts to the Swiss authorities to help them to feed and clothe these children —Mr Harvey asked whether the Government had considered any suggestion by the International Red Cross for feeding these children —Mr Foot said that the Government had considered many schemes for what was called "controlled food relief" in enemy occupied territories, but they had come to the conclusion that all these schemes must bring benefit, and in some cases substantial benefit, to the enemy —Mr Rhys Davies asked if the House might take it as correct that the food supply to the occupied territories would be sufficient to prevent actual starvation in those territories —Mr Foot I should not like to give any undertaking as to the future

Appeal Tribunals

Sir W Womersley, replying to Sir Ian Fraser, said that H M Government remained satisfied that at present it is not possible to set up tribunals in sufficient numbers to deal with all the appeals which would inevitably be made On

CHALK IN BREAD

SIR,—In his letter under this heading in your issue of July 11 Sir E Graham-Little says ‘ Lord Horder was not appointed as adviser to the Minister until 1941 and could not be concerned with the decision [to add calcium] announced in July, 1940 ’ This is true but I should like to make it clear that when my view was asked, I concurred in the decision I was not so much influenced by what Sir Ernest calls the ‘ phytic acid bogey ” as by the fact that the calcium content of the war-time diet in general is prone to be low and by the absence of any convincing clinical evidence against the policy proposed

Ministry of Food, W. HORDER

THE THIRD DIMENSION IN DIAGNOSIS

SIR —I heartily welcome and endorse the views expressed by Major McGlashan He is not the only one who longs for the day when the physician will realise that neurology and psychology are concerned with human “ systems ” as different as the central nervous system is from (say) the digestive Mind is not brain and spinal cord, nor vice versa, and it is just as futile to send a case of “ nerves ” to a neurologist as it would be to send him to a gynæcologist, unless the neurologist himself be psychologically trained

One point, I think, needs to be added to what Major McGlashan says, which is that positive and permanent harm, which is far worse than mere waste of time and energy, may be done to a psychological case by applying physical methods to him whether for treatment or diagnosis There are two reasons for this One is that the glib use of bromides, luminal, etc , over long periods impairs the personality for good I have met with cases, which from all accounts should have proved good for psychotherapy, made quite incapable of rallying for the necessary effort owing to well-meant but misguided attempts to deal with his mental symptoms by soft-pedalling his nervous system with heavy drugs The other is because the hysteric inevitably wishes to find physical reasons for his troubles To focus on his body is merely to encourage and fix him in his bad ways until at last there is often no hope of persuading him to look for his cure in mental readjustment

We do need a three—and, indeed, a four- and if need be a five—dimensional approach to medicine, if we want to see the whole patient and deal with him on a basis of reality Else, when the present psychic strain is relaxed and our fears and phobias—at present conveniently projected on to Hitler and Mussolini—come home to roost in the minds of our patients we shall find many lives ruined by the application of methods good in themselves, but exerted on the wrong part of the man or woman concerned

Harley Street W 1 L J BENDIT

PSYCHOLOGY AND CHILDBIRTH

SIR,—Few of us who have been much concerned with the emotional changes that arise during the period of reproduction are willing to admit that Dr Ernest Jones's observations are of any assistance in the conduct of normal pregnancy and parturition Long ago I pointed out the importance of corticothalamic impulses acting on the neuromuscular mechanism of labour, and I described how the inhibiting influences of the sympathetic nervous system could be eliminated In most cases education and understanding have proved sufficient to enable a healthy woman to undergo pregnancy and parturition without any psychological complication Such teaching emphasises the beauty and the naturalness of childbirth, and the readiness with which women of all classes accept this point of view suggests that it is based upon instinctive belief rather than upon education alone

For the physician-obstetrician there can only be one line of thought He knows that childbirth is a natural function, he knows that culture has introduced numberless causes for justifiable fear, and he knows that most women are physically and mentally competent to produce their children according to the law of nature He is fully aware, having seen natural childbirth, that there is no experience in a woman's life comparable to the joy of seeing and hearing her newborn baby It is distasteful to us to be asked to bear in mind, when instructing our patients, the probability that the large majority of them have a pornographic visualisation of this supremely beautiful function A psychologist of standing said to me a few days ago that I must realise that the pains of labour represent the agony of castration in the female mind, for it is the final frustration of her desire to possess that which both in function and in form is male '

The fears that may complicate labour do not arise from fanciful ideas of childhood, either phallic or fæcal The normal woman provides no evidence either in her subconscious mind or in her behaviour that her infant is “ the bad thing,” the expulsion of which will either purify or injure her The healthy woman wants children and disbelieves her own fear of childbirth, but its horrors are so generally accepted that she cannot discard her anxiety She is nevertheless often ready to accept the truth from an authoritative source, and faith in her natural function defeats her fears To teach of the joys of childbirth and motherhood is to revitalise the true instinct, almost crushed by ages of social ignorance and academic oversight

If Dr Ernest Jones will allow that his address to midwives applies to psychopathic cases which, because of their mental condition, have abnormal labours, it is acceptable as a contribution to abnormal obstetrics

Woking G DICK READ

ILLNESS IN SMALLPOX CARRIERS

SIR —In your issue of July 11 Squadron-Leader Bowe raises the question whether an illness met with in close contacts of smallpox may be considered as that disease modified by vaccination In North India in the spring of 1939, four months after successful vaccination, I had for one day the care and nursing of a case of smallpox and was immediately revaccinated Twelve days later I had symptoms similar to those which I found, on my return to England, had already been noted by Conybeare (*Lancet*, 1939 i, 1125) In July, 1942, I was revaccinated with (as the public vaccinator put it) “ very satisfactory results ” At all events there were some scabs It seems therefore that after the illness in smallpox contacts described by Conybeare and Bowe there may remain liability to infection by smallpox

Oxford. D C WILSON

DOSAGE OF LOCAL ANÆSTHETICS

SIR,—Local anæsthetic drugs exert their undesirable central toxic effects after they have gained admission to the general circulation. The onset of these toxic effects depends on the concentration of the drug in the circulation at any given time This concentration does not depend only on the total dose of drug injected into the tissues, it depends on the balance between rate of absorption from the tissues into the blood-stream and the rate at which the drug is detoxicated in the liver or excreted by the kidneys The use of adrenaline to slow down the absorption of local anæsthetics into the blood-stream is universal, and the use of larger quantities of dilute solutions rather than smaller quantities of stronger solutions is becoming more popular for the same reason The other side of the problem has rather been neglected by anæsthetists ‘ Percaine ’ is chiefly detoxicated by the liver. It is probable therefore that the same types of patient who require small and carefully considered doses of ultrashort-acting barbiturates (which are also detoxicated in the liver) will require also small and carefully considered doses of percaine I suggest that in estimating the proper dose of a local anæsthetic for a given patient the general condition of the patient and the condition of the liver in particular are more important than the weight of the patient Dr Organe's first case (*Lancet*, July 11, p 33) was a man of 68 with intestinal obstruction This condition always leads to impairment of liver function The second case shows that tolerance of the local anæsthetic varied with the state of the liver The third case was complicated by respiratory embarrassment and the large weight of the tumours, but it is possible that the great pressure which was being exerted on the liver (sufficient to push up the apex beat 1½ in.) may have contributed to the convulsions by impairing the liver function

In Dr Organe's paper the maximum therapeutic dose of percaine in man is given as 2–3 mg per 16 kg I presume this is a misprint.

Colchester D CLENDON

⁂ The maximum dose recommended by Dr Organe should read 2–3 mg per kg body-weight.—ED L

Letters to the Editor

ANÆMIA IN HOSPITAL NURSES ON WAR-TIME DIETS

SIR,—The findings of Dr Mackay and her co-workers upon the hæmoglobin levels of hospital nurses, published in your issue of July 11, raise a serious problem in the welfare of these young women I have now completed a survey, carried out between November, 1941, and July, 1942, upon the hæmoglobin of 100 day and 25 night nurses at an EMS base hospital, staffed partly by the county authorities and partly by one of the large London voluntary hospitals The nurses from the latter training school move from one hospital to another within the sector, and also receive some of their training at their parent hospital, so that their dietary cannot be considered uniform My findings for the whole series are very similar to those of Mackay et al The average hæmoglobin, estimated by the Haldane method, for the day staff was 85 2% and for the night nurses was not essentially different, being 86 0% Of the entire series, 58% had hæmoglobin levels below the lower limit of normality (90% Haldane) given by Price-Jones (1931), while of these slightly over a quarter were below 80% The average age of the nurses examined was 23 years The menstrual history was obtained in every case and revealed that irregularity beyond the normal physiological variation was present in 29% , amenorrhœa and menorrhagia were present in about equal numbers Fourteen ward sisters (average age 29 years) were also examined and showed a higher average hæmoglobin level than that of the probationer nurses Their average was 91 4%

It appears that low-grade anæmia is common in the nursing profession at the present time These young women work 10 hours a day, often under trying circumstances, and this anæmia must contribute towards their feelings of fatigue and tend towards inefficiency I agree with Dr Mackay's conclusions as to the dietary nature of the anæmia and wish to support her suggestions both that non-fortified foods might be provided and that institutional diets should be under constant review during the present war-time conditions

Farnborough, Kent HELEN P WRIGHT

DIFFERENTIAL DIAGNOSIS OF DYSPEPSIA

SIR,—Commenting on the paper by Morton Gill, Berridge, and Arden Jones (in your issue of June 20), Sir Arthur Hurst and Dr Venables refer to our mucosal relief methods which, they state, had been used by Scott and by Briggs several years before Berg's work became known in this country In 1922 Scott wrote[1] of "whitewashing" the interior of the stomach wall, and went on

> "The gastric rugæ are in this way visualised and small ulcer craters can be detected among them, whether on the *anterior or posterior surface of the stomach I have found* that ulcers in these positions are frequently missed by most other methods, as the shadow of the stomach, filled with the meal, usually obscures them entirely The duodenal 'cap' and the duodenum itself are examined in the same systematic way The diagnostic value of radiograms in this examination has always been unreliable, except, of course, for the grosser lesions Consequently, I have been forced to discard them I maintain that any pathological condition that can be demonstrated on a radiogram can be visualised by this method of palpation, but that an ulcer visualised on the screen cannot always be demonstrated on a radiogram"

Scott makes no reference to any study of the mucosal relief pattern or to the physical characters of the mucosal folds in health and disease as shown by the X-ray Glimpses of the gastric rugæ were seen on the radiograms made in 1902 by Williams of Boston, who first succeeded in using an opaque meal in human beings It was not until Forssell made his fundamental studies of the mucous membrane and its autoplastic changes that Berg, amplifying these studies, began to portray the gastric and duodenal mucosa as part of his routine examination The fluoroscopic examination of the mucosa is part of this routine, but it is the recording of the appearances in black and white which is essential What is seen on the screen can now, and must now be recorded on the film—exactly the reverse of Scott's method We have not found any reference by Briggs to mucosal relief methods

Hurst and Venables are not convinced that the diagnosis of duodenitis is justified by our radiological observations But the existence of duodenitis as a clinical entity has been established by the clinical, macroscopic, and histological observations of Judd and Nagel,[2] MacCarty,[3] and Konjetzny[4] It is unfortunate, as Hurst and Venables point out, that the opportunity for histological control and confirmation of the radiological diagnosis of duodenitis is rare In our experience, this opportunity has only occurred on one occasion—in a case of true diverticulum of the duodenal cap with an associated duodenitis An illustration of this case has been published by one of us[5] Yet the absence of histological control does not, in our opinion, invalidate our radiographic interpretation of duodenitis Here we have patients with (1) a characteristic duodenal history, often extending over many years, (2) no radiographic evidence of an active chronic ulcer in the form of a niche, (3) no evidence of scarring changes in the duodenal cap to indicate healed ulceration, and (4) abnormal mucosal relief appearances which we have been unable to obtain in presumably healthy individuals These abnormal mucosal relief appearances are similar to those obtained in the stomach in gastroscopically controlled cases of gastritis We submit therefore that, as these abnormal mucosal appearances in the stomach are produced by gastritis, similar abnormal mucosal appearances in the duodenal cap will be produced by a corresponding lesion —e g , duodenitis

In referring to the observation by Morton Gill and his colleagues that "ulcers complicating duodenitis are usually superficial and appear to be implanted on the swollen rugæ" and that "they often heal rapidly leaving the duodenitis still present and apparently active" as purely imaginative, the choice of words is unfortunate We can endorse their observation It is not a unique experience to demonstrate on the film the niche of a superficial ulcer in a duodenal cap, the mucosal relief of which is characteristic of duodenitis If, after treatment, the abnormal mucosal relief can still be demonstrated and it is proved that the ulcer has healed by showing the ulcer scar on the film, it is surely a logical conclusion that the duodenitis is still present and apparently active, if the patient still has his symptoms

G R MATHER CORDINER,

Upper Wimpole Street, W 1 G T CALTHROP

HOSPITAL OR DOMICILIARY CONFINEMENT

SIR,—As a practitioner of 45 years' standing I was interested in Dr Menzies's article in your issue of July 11 I do not agree that fear plays an important part in the avoidance of pregnancy I have never been asked, "Will I get over it ?" but of course have often been asked by elderly primiparæ, 'Will I have a bad time because of my age ?'" I put this question to a district nurse of long experience, and she could only think of one case Antenatal supervision has not, in my opinion, frightened women

At first it was not understood, and the women needed educating, but now it is taken for granted and only in very rare cases refused Hospital deliveries are not, I think, necessary except where major operative treatment is required, or where poverty, filth and lack of accommodation make it impossible to treat a case properly With regard to breast-feeding, I am surprised that the hospital statistics show up so well, for my own experience is that a large percentage of women confined in hospital and nursing-homes come out with the baby on the bottle I agree with Dr Menzies that medical officers of health and other people in administrative posts get a wrong perspective of the dangers of midwifery because they are chiefly concerned with the deaths and with the notifications of septicæmia Generally speaking, the average case attended at home is so straightforward that it can be safely attended by the midwife only—as the facts themselves show

Brewood, Stafford G P JAMES

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[1] Scott, S G *Lancet*, 1922, ii 1059

[2] Judd E S and Nagel G W *Ann Surg* 1927, 85 380

[3] MacCarty W C *J Amer med Ass* 1924 83 1894

[4] Konjetzny G E *Wien klin Wschr* 1935 46 451

[5] Cordiner, G R M *Brit J Radiol* 1942, 15, 33

made up to the new permitted formula). On the other hand Hess in his volume "Ueber den Suss-stoff Dulcin" (Berlin 1921) carefully reviews the facts and concludes that dulcin in quantities likely to be consumed is harmless, and Taschenberg (*Dtsch med Wschr* 1922, 48, 695) arrives at the conclusion that dulcin in amounts greater than necessary to replace sugar has only an insignificant, if any, toxic action. Admittedly the last-named was mainly concerned with the antipyretic action but his researches were carefully conducted and other toxic symptoms were not observed. Attention may also be drawn to Siedler (*Chem Ztg* 1916 40 853), who after reviewing pharmacological and clinical data on the use of dulcin concludes that in quantities likely to be consumed it is harmless to man and experimental animals. Further the new tablet permitted by the Ministry of Food order contains 0.06 grain of dulcin and 250 such tablets must be consumed to obtain one gramme of dulcin; it is extremely improbable that any person will consume more than one tenth of this quantity daily. I have observed a number of individuals who have consumed this amount—i.e., 25 tablets daily—over a period of some months, in order to see whether a cumulative effect exists, but no ill effect has been observed. It is of course possible that an idiosyncrasy towards dulcin may be met with; but I have been unable to obtain any account of such a case.

I have had experiments carried out on the decomposition of dulcin by autoclaving a solution buffered in citric acid/sodium citrate to pH = 4.0. After two hours at 240° F, 70 per cent of the dulcin remained; of the remainder the bulk is converted to insoluble inert products and of *p*-aminophenol only a trace is obtained. Thus, in cooking or canning, the hazard of toxic breakdown products is negligible and need not deter its use.

Care should be taken by users to see that any dulcin purchased is pure; reputable manufacturers ensure this by working to a standard, but parcels of poor quality dulcin in circulation may contain impurities which are more of a danger than is dulcin itself. It is probably the presence of such rapidly inert materials that led your correspondent to observe that dulcin is a good deal less sweet than is claimed. The accepted figure is that dulcin will replace 250 times its weight of sugar and this has been checked by a large variety of observers, both by the method of limiting dilution and by practical baking tests. A sound commercial dulcin should be of a white or pale pink colour, m.p. not lower than 168° C, ash negligible, entirely free from phenetidine or its salts and should assay at 99%+ as *p*-phenetyl carbamide, after deducting moisture which should not exceed one per cent.

G. M. DYSON,
Chief Chemist.

Genatosan Ltd.

DIPHTHERIA IMMUNISATION

SIR,—The desirable object of encouraging diphtheria immunisation is ill encouraged by the present film propaganda, which reveals a simple hypodermic injection being given to an infant in the wrong manner and the wrong place. The infant is overwhelmingly overpowered and the actual injection is given most aggressively. The seat of election for any hypodermic injection should be chosen on the less sensitive extensor or dorsal aspect of the limb or body. Perhaps it has not yet been taught where injections should actually be given. The neighbourhood of the antecubital fossa is predominantly useful for intravenous administrations, but the film suggests that this fossa is being used like a dartboard, with needless pain to the child and causing repulsion in the parent.

Walton-on-the-Hill. G. C. SNEYD.

MEDICAL HONOURS.—The MBE has been awarded to Captain (temp. Major) G. F. Edwards, MB LOND, RAMC, for gallant and distinguished services at Malta.

MEDICAL CASUALTIES.—The following have been announced:

Missing presumed killed in the loss of HMS Dorsetshire.—Surgeon Commander F. C. M. Bamford, MB GLASG, RN, T/Surgeon Lieutenant S. W. Pratt, MB LOND, RNVR.

Missing.—Lieut.-Colonel Gerald Condon, LRCPI, IMS, at Tobruk; Major A. C. Glendinning, MB BELF, IMS, in Malaya; Colonel G. P. Kidd, MC, MRCS, RAMC, in the Middle East; and Captain N. C. Rogers, MB LOND, RAMC, in Libya.

Wounded.—T/Surgeon Lieutenant G. P. Fahrni, RCNVR.

STAMPS OR TAXES?

Two trends can now be seen in our social services, results of economic changes brought about by the war. One is the suggested inclusion of dependants in National Health Insurance with the development of consultant, diagnostic and possibly inpatient facilities not at present provided. Such an extension of the panel would cover 90% of the population; so that the method of weekly contributions, cards and stamps would become in effect a somewhat cumbrous way of excluding 10% of the population from an otherwise general scheme. The other trend is the provision by the state, out of taxation, of social services to those with special needs, irrespective of their individual contribution. Examples of such services are medical attention for evacuated children and air-raid casualties, and war pensions. Until recently industrial workers contributed to the funds for social services by indirect taxation and contributory insurance, income-tax being paid by a relatively smaller group. The number of tax-payers has now greatly increased, partly owing to the lower level at which income-tax is levied and partly to the increase in absolute (not relative) wages. If these opposing trends develop unchecked we may find that our social services, while requiring more machinery, are becoming less efficient. We have 1001 voluntary agencies providing services to small groups in the community, and nearly 7000 approved societies handling (piecemeal and with considerable running costs) social insurance which in the view of PEP[1] is neither genuinely social nor genuinely insurance. Indeed, as an experiment in democracy, PEP feels that approved society administration of NHI cash benefits is almost a complete failure, and suggests that the only approved society needed is the nation itself. It is true that less than 34% of the expenditure on state pensions from 1926 to 1938 was covered by contributions and interest; all the rest had to be found by the state, out of taxation.

The cost of administering the various insurance benefits varies enormously. It cost only £750,000 to distribute the Ministry of Pensions cash and medical benefit of £42 million; but it cost £6 million to administer £35 million worth of NHI cash and medical benefit, and £4 million to administer £9 million of Workmen's Compensation payments, and the companies and collecting societies doing industrial insurance collected £65 million in premiums and distributed £33 million in benefits at a cost of £22 million. There are thus substantial possibilities of cutting out waste and extravagance, though the method will need consideration. The London County Council on July 28 expressed to the Beveridge Committee its preference for one comprehensive scheme of social security (blindness excluded) administered centrally to provide adequate cash benefits for all needs and risks "actuarily ascertainable," personal services remaining the concern of local authorities. PEP advocates the creation of a Ministry of Social Security to examine and deal with the distress resulting from unemployment, injury, disease, widowhood and old age, as parts of a single problem. There should be a common standard of minimum human needs in terms of which allowance rates and scales can be framed, and a human needs family budget might be the basis of a revised minimum cost of living index. Coupled with this there would have to be minimum wage legislation and family endowment.

On such a basis adequate income-maintenance allowances could presumably be provided. The new ministry would necessarily absorb the personnel and functions of existing public and private agencies. Its funds might be raised by state grants, local authority rates, workers and employers contributions, and from charges on employers; but chiefly by direct taxation of all incomes. PEP sees the local administrative unit of the ministry as a single social security office for all departments, but proposes that unemployment benefit should be administered from a special office at the employment exchange, and sick benefit at health centres. Many payments could conveniently be made as now through post offices. Defects and abuses of the present system of workmen's compensation have been well catalogued by the late Sir Arnold Wilson and Prof. Hermann

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[1] Planning, No. 190, July 14, 1942.

DECLINE IN MENTAL HOSPITAL ADMISSIONS

SIR,—On p 51 of your issue of July 11, the Minister of Health is reported as describing the decline in mental hospital admissions since the war as "an eloquent testimony to the nerves of the nation," while on p 50 Medicus, M P, wonders "if this is due to a passing phase or to deeper mental and physical causes" The matter was briefly discussed at a meeting of psychiatrists which I attended some months ago, and here a general opinion was expressed that the principal cause was the fall in unemployment The low incidence of mental disorder in the USSR is possibly also due largely to the low rate of unemployment in that country The fact that discharged patients now find little difficulty in obtaining work, in contrast to prewar conditions, seems to be a contributory factor in the lessening of relapses Before the war one noted in a considerable number of cases that the onset of a psychosis had been preceded by a long period of unemployment before the ultimate breakdown took place, it is not difficult to appreciate the mental and physical stresses involved

If these impressions are correct—and I would stress that they are only impressions, and not scientifically checked observations—then in the postwar period the remedy for these ills will be in the hands of the politicians rather than in those of the doctors It is to be hoped, however, that the doctors will then give the politicians a firmer lead than the nebulous wonderings of Medicus, M P, and so render it unnecessary for a future Minister of Health to indulge in pious non-sequiturs like that quoted above

St Bernard's Hospital, Southall, Msx J B S LEWIS

SOLDIER'S DOCTOR

SIR,—As a commander of a field ambulance in the last war I got to know a good deal about MOs They do get pushed around at times There were two types liable to this First, the men who are good at this work They adapt themselves and pick up the new conditions rapidly, but never really get into the home life of the unit (They are needed in civil life as well as military and do holiday work at places sometimes year after year) The other type is those who, like your correspondent of July 18, are always telling us they are square pegs put into round holes They are not, they are discarded bricks incapable of malleability and shaped so as to fit into one hole only We had such MOs in the last war One insisted on doing his sick parade in the morning in pyjamas and gum boots He was moved on Another signed up half an RE company as being inoculated against typhoid without having done any of them This was discovered a year later but the divisional commander would not have him court-martialled because he had a high opinion of the medical profession and did not want a scandal to besmirch it This was wrong He would probably have been cashiered, and then struck off the register, and thus have saved the insurance committee of the area in which he worked afterwards a lot of trouble, and the profession as bad a reputation in that area as that which it had with the units of the RE and RA to which he was attached

After the CO the MO has the greatest influence in the unit for good or bad of any officer in it We had good MOs as well I need not describe them, because there are good ones in this war also There is for instance Z who went back to the battalion he was with in the last war and has refused to leave, in spite of bribes of a majority and a specialist job There is little Y who with a stammer on his tongue and a blinking of his lids, but always a twinkle in the eyes beneath, had to be lugged out of the back of the class Two years ago turned up with a ribbon on his breast We learnt that he had walked across Belgium with a cracked head, but could not for the life of us find out why he got that MC Questions only brought back the stammer and the blink and the statement that those fools of doctors insisted on his going into hospital but they had let him out again now and he was going back to the battalion A month ago he popped in again, on leave before going overseas once more with the same battalion But he was a different man Two inches taller, with his head erect, his shoulders thrown back, the stammer and the blink gone, but still with the twinkle in the blue eyes, he had a way of putting his foot down that made the old fogey wonder whether there might after all, be as good battalions in this war as there were twenty-five years

Of course it may be that this war so differs from that one that doctoring as well as troop movement and gunnery is ineffable to the old-stager It is unlikely Human nature is unchanged The seriousness of the tone of your correspondent's letter lies in the fact that it may tip a fellow over into joining the Services with his mentality rather than that of ageing Z and young Y And, though there are a regrettable number about of the British matron's babies mentioned in the opening sentence of your leading article, there are many going in with heads erect, but they are the little men at the back of the class and not those that throw their weight about the hospitals and get the best house-jobs

FOGEY

"DANGERS OF DULCIN"

SIR,—Dr Shackle draws attention to the fact that one article by Uglow and one by Rost and Braun have not been contradicted My answer is that his inferences from those articles are misleading Uglow quotes a statement by a pharmacist that boiling (cooking is not a correct translation in this instance of the German "kochen") of faintly acid, neutral or basic solutions of dulcin led to the formation of *p*-amidophenol He himself claims that such hydrolysation takes place only when boiling for 2½ hours with caustic soda or mineral acids As a matter of fact it is known that an alkoxy group is one of the most stable aromatic radicals, and can be hydrolysed only by heating with strong mineral acids under considerable pressure Uglow refers to one ingenious method—covered by a German patent—for preparing dulcin by heating diphenetidin carbonate with ammonium carbonate or urea (i e, in strong solution) under pressure at 160° C I may mention that vanillin, used as a food flavouring agent, which contains a methoxy group is prepared by oxidising isoeugenol in 12–15% caustic soda solution at about 120° C

One must bear in mind the exceptional circumstances under which the experiments, referred to by Uglow, were carried out I happened to be in Russia in 1923, and am well aware of the, extreme lack of technical and research facilities in that country at that time, let alone in 1917–18 The best method used in those times for preparing *p*-phenetidin, from which dulcin was made, was by combining *p*-amidophenol with benzaldehyde, and the benzyliden-*p*-aminophenol thus formed was ethylated with ethyl bromide The benzylidene *p* aminophenetol was then hydrolysed with mineral acid, whereby benzaldehyde was recovered and *p*-phenetidin obtained It is possible that during such hydrolysation some *p*-aminophenols were formed and that the dulcin then prepared in Russia was contaminated with them The most relevant report is that by Professor Lichatschoff to the effect that dulcin is partly converted into *p*-amidophenol by certain animals, such as dogs, but he adds that it is quite harmless when used in small doses by healthy human beings The report by Rost and Braun confirms this The fatal case quoted by them of a child consuming 8–10 g is hardly surprising, such a result would probably follow when a child partook of a similar quantity of any other condiment used in cooking

Dr Shackle does not mention another report by Uglow (*Arch Hyg Berl* 1923, 92, 331) on saccharin, which is far more damnatory than his attack on dulcin

Hendon L G RATNER

SIR,—Your correspondent's fears on the toxicity of dulcin evidently spring from a right and proper regard for care in the use of substitutes, as far as dulcin (*p*-phenetyl carbamide) is concerned, he can rest assured that the likelihood of toxic symptoms arising from its use is very remote As one who has for many years been concerned in research on this material, I should like to comment as follows on Dr Shackle's letter

He quotes Rost and Braun's article of 1918, but their subsequent work (*Arb ReichsgesundhAmt* 1926, 57, 212) should be read in its entirety, it states that, like all phenetidines, dulcin in massive doses has a marked toxic effect on the central nervous system, and a slight one on hemoglobin, especially in young animals Their idea of a massive dose is 5–10 grammes (equivalent to 3–5 lb of sugar in sweetness, or to 1250–2500 tablets

Public Health

Smallpox in Swindon

FOUR of the passengers on the infected ship that berthed at Glasgow on May 28 reached Swindon on June 1 and were there kept under observation On June 7 a baby was reported ailing and slightly febrile He was well again on the 8th and 9th ; on the 10th a slight erythema appeared on the inner sides of the thighs with one definite pock on the lower abdomen The child was confined to the house but did not look like smallpox until the 12th, when papules were felt on the forehead and on the extremities, and he was removed to hospital All known contacts were vaccinated and kept under observation One contact a child was unwell on the 22nd and on the 25th had a rash like a sweat rash on its thighs By the 26th this child also had distinctive signs of mild smallpox Vaccination was noted as a good take on the 22nd A third child, a sister of the second was removed to hospital on July 1 because of an erythema of the thigh, but nothing further developed On June 26, the day after the second child was removed a man came under observation who had been ailing since the 22nd, when he had headache and stayed away from work but was well enough to visit his doctor on the 24th On the 26th he had a definite papular eruption most marked on the face neck and forearms, where he had been exposed to the sun on the 21st He was removed to hospital where he developed a moderately severe semi-confluent type of smallpox

Dr Llywelyn Roberts informs us that these are the only cases of smallpox seen to date (July 20) in the town, but much confusion has been caused by skin eruptions following vaccination which in some cases simulated a commencing attack of smallpox

War and the Public Health

Dr Neil Reid county medical officer of Stirling, published his annual reports for 1938, 1939 and 1940 in one volume which makes it easy to follow the history of public health from its record year 1938 through the early phases of the war era Though the county has but 175 000 inhabitants and is not a just sample of the population of Great Britain, the changes in the health of the people there are similar to those recorded elsewhere Generally health declined from 1938 but we are not justified in attributing this to war conditions for 1938 was the culmination of a series of years of exceptionally healthy conditions and some decline might have been expected in any circumstances The two severe winters of 1939 and 1940 would of themselves have reduced the record of the previous years, so we must try to estimate whether the deterioration is greater than would have occurred in peace The birth-rate, which was 18 5 in 1938 and 18 6 in 1939 fell to 17 3 in 1940 The two first rates are slightly above the average for recent years ; the rate for 1940 was a low record for the county. Infantile mortality showed a brisk rise—53, 62, 74—but the rates for 1936–38 were 74, 69 53 The average rate for the past decennium was 70, but this was exceeded in seven years out of ten. The general death-rates for the three years were 10 8, 11 7, 13 0 but as the average for the five preceding years was 12 0 it is the low rate of 1938 which was exceptional The tuberculosis mortality-rates were 0 44 0 39 0 45, the three lowest rates ever recorded in the county The tables of notifiable diseases show three very quiet years with recorded total numbers of 1086, 864 and 747, the only unfavourable features being increases in cerebrospinal fever and pneumonia The numbers of cases of notifiable pneumonia were 107, 107, 142 The brisk rise in 1940 is no more than would be expected from the severe winter of that year. On the whole there is no evidence that war conditions had any influence at all on the health of the community and this is true for most of Britain From tradition we expect war to be associated with pestilence, but the history of Britain in the past hundred years shows no such connexion None of the great epidemics of the century occurred in the great wars, except that the influenza epidemic of 1918 started before the last great war was over and the two most recent epidemics of cerebrospinal fever appeared in the last war and in this The great London epidemic of cholera—the famous Aldgate Pump outbreak of 1854—did occur when the Crimean War was in progress, but it was only an exacerbation of an epidemic which had been raging for ten years or so The influence of war in increasing tuberculosis mortality seems to be established, but the break in the downward course of tuberculosis characteristic of the last war period started before war was declared and the same is true of the slight rise associated with the present war

Infectious Disease in England and Wales

WEEK ENDED JULY 18

Notifications —The following cases of infectious disease were notified during the week smallpox, 1 (port of Liverpool) , scarlet fever, 1558 , whooping-cough, 1295 diphtheria, 692 , paratyphoid 6 ; typhoid, 5 , measles (excluding rubella), 7050 pneumonia (primary or influenzal) 516 , puerperal pyrexia, 155 ; cerebrospinal fever 83 , poliomyelitis 16 , polio-encephalitis 1; encephalitis lethargica, 2 , dysentery 198 , ophthalmia neonatorum, 106 No case of cholera plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on July 15 was 1549, including scarlet fever, 225 diphtheria 157 ; measles, 401 , whooping-cough 278 , enteritis 57 , chicken pox 83 , erysipelas, 29 , mumps 57 , poliomyelitis 2 , dysentery, 39 , cerebrospinal fever, 13 puerperal sepsis 13 german measles, 8 , other diseases (non infectious), 115 , not yet diagnosed, 72

Deaths —In 126 great towns there were no deaths from scarlet fever, 1 (0) from an enteric fever, 7 (1) from measles, 13 (3) from whooping-cough 8 (0) from diphtheria, 37 (3) from diarrhœa and enteritis under two years, and 10 (1) from influenza The figures in parentheses are those for London itself

Hull reported the fatal case of enteric fever There were 6 deaths from diarrhœa at Birmingham and 4 at Liverpool

The number of stillbirths notified during the week was 233 (corresponding to a rate of 38 per thousand total births), including 20 in London.

Appointments

DOWELL, T L , MB LPOOL examining factory surgeon for Bentham, Yorks

FRANKS HAROLD, MB BHY DURH DPH temp deputy MOH and deputy School MO for Barking

HESELTINE, L B MB LEEDS examining factory surgeon for Brighouse Yorks

Births, Marriages and Deaths

BIRTHS

BARRINGTON-WARD —On July 19, the wife of Sir Lancelot Barrington-Ward—a son

DAINTY —On July 23, the wife of Dr Ralph Dainty—a daughter

DAVIES —On July 22, at Derby, the wife of Captain L E C Davies, RAMC—a son

DICK.—On July 23, at Oxford the wife of Captain R. C S Dick, RAMC—a son

GUIRDHAM.—On July 22, at Batheaston, Somerset, the wife of Dr Arthur Guirdham—a son

HARRIES —On July 9 at Gloucester the wife of Surgeon Lieut - Commander C V Harries—a daughter.

HEISCH —On July 15 in Nairobi Kenya the wife of Dr Ronald Heisch Colonial Medical Service—a daughter

JENKINS —On July 20, in London the wife of Dr J R F E Jenkins of Peterstow Ross-on-Wye—a son

SHIRE —On July 18 at Chichester, Sussex, the wife of Surgeon Lieutenant T Hugh Shire, RNVR—a son.

THORNTON —On July 23 at Cheam, the wife of Major H L Thornton, RAMC—a daughter

MARRIAGES

BROWN—BRYANT —On July 25 at Sidcup, Kent, Kenneth Lansdowne Brown MB to Jean Bryant, LDS

FFRENCH—GODFREY —On July 18, at Harrow Weald, Geoffrey Ernest Ffrench MB to Marjory Grace Godfrey

PLAYER—HARTE-LOVELACE —On July 18 at Canterbury, Henry Percival Player MRCS, to Dora Lilian Harte-Lovelace

RUSSELL—MORRIS —On July 20 at Leeds, Patrick Morris Gordon Russell FRCS lieutenant RAMC, to Stephanie Denman Morris of Abergele N Wales

DEATHS

BIRKETT —On July 19 in Montreal, Brigadier-General Herbert Stanley Birkett CB MD LLD, emeritus dean of the medical faculty of McGill University aged 78

HORWOOD —On June 21, at Eastbourne Janet Gertrude Horwood FRCSI LRCPE.

ORR.—On July 19 at Rosslynlee James Henry Cubitt Orr MD EDIN medical superintendent of the Midlothian and Peebles Asylum

SPENCER.—On June 3 at Johannesburg, Transvaal Henry Alexander Spencer, MRCS aged 79

TAYLOR.—On July 22, at Formby, Mark Ronald Taylor, MRCS

Levy [2] The injured man needs care and maintenance whatever the cause of his injury, and if disabled permanently his pension and compensation should not depend on litigation If both payments were made direct from a social security fund, it would be for the Minister to recover such damages and costs as might be granted by the courts from the employer There could also be a special charge on industry to cover expenditure on industrial accidents and diseases With this, of course, would go a comprehensive industrial health and rehabilitation service That we shall achieve some of the benefits aimed at in these schemes seems likely, for social conscience has been growing healthily in this country for many years, how we shall set about it remains to be seen If the manner is less orderly and comprehensive than could be hoped it will probably be more elastic than might be feared

Obituary

GILBERT FRANCIS SYMS

F R C S SURGEON REAR-ADMIRAL RN

Admiral G F Syms died on June 23 at the age of 59, after a period of ill health during which he insisted on remaining at his post He qualified from Guy's in 1908 and entered the Royal Navy the following year In 1914 he was awarded the Gilbert Blane medal and at the end of that war he was promoted surgeon commander After taking his FRCS in 1923 he was posted to Plymouth Naval Hospital as surgical specialist In 1934 he became professor of surgery at Haslar and five years later he returned to Plymouth to take charge of the hospital The King of Denmark appointed him a knight of the order of Dannebrog in 1922 and last year he was made an honorary surgeon to King George VI

An old colleague writes "Gil" and his wife "Joe" were dear friends of my family It was my misfortune to have to break the news to him some years back that his operation caused us all alarm Never have I met a braver man for his knowledge of surgery must have told him that he was doomed He faced it squarely—only to be met by further affliction His eldest son was killed and his daughter widowed by the war I stayed with him in his last appointment Despite declining health and bombing he bore the brunt though he could have reported sick and spent his remaining years in the peace and quiet of the country

THOMAS CLOVER LARKWORTHY

M B CAMB, SURGEON COMMANDER RNVR

Surgeon Commander T C Larkworthy, who for many months had been reported missing following the loss of HMS *Neptune*, is now officially presumed killed A great-nephew of Joseph Clover, who gave his name to the inhaler, he was educated at Bradfield and Emmanuel College, Cambridge, and qualified at St George's Hospital in 1928 After holding house-appointments there and at the Brompton, he obtained clinical assistantships at the Victoria Hospital for Children and in the infant department at St George's He joined the RNVR soon after qualification, and continued in the service after entering general practice in Kensington At the outbreak of war he held the rank of lieutenant commander, and after serving ashore for a time was posted to HMS *Curacoa* His experiences off the Norwegian coast, for which he was mentioned in dispatches, were described in the *Journal of the Royal Naval Medical Service* His promotion to surgeon commander soon followed

Larkworthy possessed qualities of sound judgment and knowledge, kindness and unselfishness and these qualities had already assured his success in practice, for his patients soon recognised that he did his work well without fuss or striving to impress He was a keen freemason, and in this, as in everything he did, showed his capacity for understanding and making friends He was thirty eight years of age, and he leaves his widow with three small daughters

ANTHONY RICHARD BARRETT

M B N U I, TEMP SURGEON LIEUTENANT RNVR

Surgeon Lieutenant A R Barrett, who was reported "missing presumed killed in action" last December, was the younger son of John Barrett of Bangor Erris, co Mayo The family came from Wales and settled in the barony of Tyrawley in the West of Ireland in the twelfth century, holding their property there by grant from King Henry II Anthony, who was born in 1915, was the namesake of his ancestor the Celtic poet of the early nineteenth century He was educated at St Muirdeach's College, Ballina, where he matriculated to the National University of Ireland at the age of sixteen As a resident student of the Richmond Hospital, Dublin, he graduated MB with honours from University College, Galway, in 1937 After a trip to the Far East as ship surgeon he was appointed senior house-surgeon at the Caernavon and Anglesey Infirmary at Bangor, and in 1939 he joined the staff of West Ham mental hospital as assistant medical officer His genial temperament and shrewd wit made Billy, as he was affectionately called, a pleasant companion He was a sound physician and his growing enthusiasm for psychiatry won the respect of his colleagues He married Madge MacDonagh of Ballymote, co Sligo

WILLIAM MARTIN

M B GLASG

Dr William Martin, who died suddenly on July 7, had been medical superintendent of Stobhill Hospital, Glasgow, since 1927 He was a graduate in medicine of Glasgow University, qualifying in 1914 He joined the Army in 1915 during the last war, and served in France with the rank of major On his return to this country in 1917 he was appointed to Dudley Road Military Hospital Birmingham, and three years later he became medical superintendent of Selly Oak Hospital

Dr Martin's influence as an administrator extended beyond his own large hospital at Stobhill In 1929, after the passing of the Scottish Local Government Act, Glasgow corporation appointed him deputy medical officer (general hospitals) in their public-health department He brought about great improvements at Stobhill A large X-ray and electrical department was built, the maternity unit was enlarged, a receiving department and a biochemical laboratory added, and plans had been prepared for a block for sick children and a nurses' home He also took a prominent share in developing teaching facilities in the hospital, and he was an able and friendly collaborator in developing the cooperation of the university and city in medical teaching and research

Dr Martin was content with nothing but the best, but he was never ruffled by difficulties, and his happy and cheerful disposition attracted the friendship of all who served in his hospital

CONSERVATIVE HEALTH AND HOUSING COMMITTEE —At a meeting of this committee held on July 21, under the chairmanship of Sir Francis Fremantle, Lieut-General Alexander Hood, DG AMS, gave an encouraging account of health conditions in the armies at home and abroad, though increased vigilance will be necessary during the winter when hutments and billets have to accommodate increasing numbers With various advisory bodies to keep them in touch with civilian practice, his department was now organised on a basis that ensured complete medical service for the troops Mr Hugh Linstead was elected deputy secretary of the committee to assist Captain G S Elliston, who has been hon secretary since 1931

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[2] Workmen s Compensation, London, 1941

PNEUMONIA TREATED WITH SULPHAPYRIDINE AND SULPHATHIAZOLE

CONCENTRATION OF THE DRUGS IN THE BLOOD

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THE present work was begun in the spring of 1940, when little was known of the pharmacology of sulphathiazole. We thought it would be useful to compare sulphathiazole with sulphapyridine in the treatment of lobar pneumonia; it seemed at the time that sulphathiazole might be less toxic than sulphapyridine and little if at all inferior in bactericidal action against the pneumococcus. Since the bactericidal effect depends on the concentration of the drug in the blood and tissue fluids, it was necessary to base the comparison between the two drugs on blood analyses rather than on dosage alone. The plan of work was therefore to carry out clinical trials with both sulphathiazole and sulphapyridine, with analyses of the blood at short intervals during the whole course of treatment.

Pneumonia was not very prevalent during 1940 and the number of cases studied is small—too small for an assessment of the relative therapeutic value of the two drugs. Since our work began, however, several American workers have published the results of clinical trials on very large numbers of cases, which show that sulphathiazole has no special advantage over sulphapyridine, except that it is less likely to cause nausea and vomiting. We therefore present our findings, primarily to show the concentrations of the drugs in the blood on a given dosage.

MATERIAL AND METHODS

Only the free drugs in the blood were estimated. The technique was essentially that of Marshall and Litchfield (1938) with some differences in detail.

Whole blood, 1 c.cm., is measured into 15 c.cm. of distilled water. After thorough laking of the corpuscles, 4 c.cm. of 15% trichloracetic acid is added, the mixture is shaken, allowed to stand for ten minutes and filtered. To 10 c.cm. of filtrate 1 c.cm. of sodium nitrite solution (0·1% freshly made) is added; the mixture is shaken and allowed to stand for three minutes; then 0·1 c.cm. of urea (5%) is added, the mixture is shaken and allowed to stand for two minutes; finally 1·9 c.cm. of phosphate buffer (M/1 KH_2PO_4) and 5 c.cm. of dimethyl-α-naphthylamine (0·4% by volume in 95% alcohol) are added; five to ten minutes are allowed for full development of the red colour, which is either measured in the photometer or compared in the colorimeter with a standard solution of the drug treated in the same way as the blood filtrate. Most of the measurements in this work were made in the Pulfrich photometer, using the filter S 53, and working with a control mixture in the compensating cell, prepared from the reagents alone with water in place of blood filtrate.

It was found that the method described by Marshall (1937) for the estimation of sulphanilamide gave low results when applied to sulphapyridine or sulphathiazole. In experiments on recovery of known amounts of the drugs added to blood, the values found ranged from 60% to 80% of the true figure. Marshall and Litchfield (1938) recommended destruction of excess nitrite with ammonium sulphamate. We used urea for destruction of nitrite; it improved the recovery of the drugs added to blood, but the results were still low. Buffering of the final mixture to pH 1·8 hastened the rate of colour development without altering the final reading. Finally, it was found that the recovery of the drugs added to blood was more satisfactory if the dilution of blood at the stage of protein precipitation was 1:20 instead of 1:10 as in the original method. Even in the method finally adopted the recovery of the drugs added to blood was only 90% of the true figure, but the loss was almost constant and the appropriate correction could therefore be made.

The series consisted of 30 cases of lobar pneumonia occurring between April, 1940 and January, 1941. There was no epidemic of pneumonia during the period, and the type of infecting pneumococcus varied so widely that nothing would be gained by describing the incidence of the different types. The ages of the patients ranged from 16 to 79. Alternate cases were treated with sulphathiazole and with sulphapyridine, without selection; 16 cases received sulphathiazole and 14 sulphapyridine. In the sulphathiazole group 11 patients were under the age of 30 and the eldest was 79: in the sulphapyridine group 10 were under 30 and the eldest was 58. In every case the free drug was given by mouth. Doses were given four-hourly. The standard dosage for sulphapyridine was 2 g. for the first three doses, then 1 g., continued until the temperature had definitely settled and the clinical condition was improving. The earlier cases treated with sulphathiazole received the same dosage as the group receiving sulphapyridine; later the dosage of sulphathiazole was doubled. The full dosage according to these three regimes was continued for periods ranging from 60 to 96 hours according to the clinical indications: in some cases treatment was continued at reduced dosage for a further period. Samples of blood for analysis were taken thrice daily at four-hourly intervals, the blood collections being made at the mid-point between doses of the drug.

CLINICAL RESULTS

Both drugs were effective in producing defervescence and clinical improvement. Apart from 3 cases with special complications the time taken for the temperature to fall to normal was eight to fifty-six hours, and was usually within twenty-four hours. There was no significant difference in the rate of defervescence between the groups treated with the two drugs, and no apparent relation between the rate of defervescence and the concentration of the drug in the blood.

Of the patients treated with sulphathiazole, 1 died, a man of 79 who was gravely ill when treatment started. There was temporary improvement after one day of treatment, but he relapsed and died on the third day. There was one death also among the patients treated with sulphapyridine, that of a man of 51.

Leucocyte counts were made daily in all cases and varied widely. In the group treated with sulphapyridine 12 showed a fall in leucocytes during treatment (maximum fall 23 400 cells per c.mm.), 3 showed no change and in 1 case there was a rise. In the group treated with sulphathiazole 9 cases showed a fall (maximum fall 23 000 cells per c.mm.), 3 showed no change and 4 showed small rises. There was no relation between the changes in the leucocyte count and the clinical course of the disease.

TABLE I—URINARY ABNORMALITIES IN PATIENTS TREATED WITH SULPHAPYRIDINE AND SULPHATHIAZOLE

—	Sulphapyridine	Sulphathiazole
Total cases	14	16
No. with urinary abnormalities	9	12
Albuminuria	8*	10
Gross hæmaturia	1	0
Microscopic findings		
Red cells	5	3
Pus cells	3	6
Casts	3	2
Suppression of urine	0	1

* One patient had acute nephritis on admission.

The only toxic effects seen were vomiting and renal abnormalities. Vomiting was troublesome with both drugs, but was slightly commoner with sulphapyridine than with sulphathiazole: 10 out of 14 patients receiving sulphapyridine vomited, and 6 out of 16 receiving sulphathiazole. It should be noted, however, that 10 of the patients treated with sulphathiazole received double the dose used for the group on sulphapyridine, and 4 of the patients who vomited were on the higher dosage. It is difficult to say how far the renal abnormalities were due to treatment, since toxic damage to the kidney may occur in the untreated disease. The incidence of urinary changes is shown in table I.

Notes and News

IN TIME OF NEED

THE Professional Classes Aid Council (20, Campden Hill Square, London, W 8) was formed to help people through difficult times Most of the benevolent funds of the professional associations, including the RMBF, are represented on it and wasteful overlapping is avoided while helpful cooperation is fostered War has increased its work but decreased its income, and last year's deficit of £889 has grown to £1184, though £1124 less than last year was distributed The decrease of nearly £1000 in subscriptions and donations is partly due to the reduction in income-tax allowed to charities under the Finance Act of 1941 But in spite of these hindrances 319 families were helped with money during 1941–42, and many others were advised of appropriate sources of assistance Special annual grants were given to 31 people, and 134 children—67 boys and 67 girls—were helped with their education It is in this part of the council's work that the distress and hardship caused by the war is most clearly to be seen, for many women whose husbands are missing in the Far East have suddenly found themselves without money for the maintenance of schooling of their children Fewer students have applied for training grants this year but most of them have had to ask for larger sums Fifty—17 men and 33 women—were accepted and some of them have chosen medicine, physical culture, social work and nursing as their careers Over £3000 has been spent on what is called general help, of which just over £2000 went in temporary maintenance grants to applicants, many of whom were helped to obtain permanent grants from other sources Sums were also allocated under this heading for outfits, payment of life assurance premiums, and arrears of rent The council was one of the good things that emerged from the last war It is up to us to see that at the end of this one it is fighting fit

A GOOD START FOR CHILDREN

THE National Council of Women has made representations to the Minister of Health and the Chancellor of the Exchequer on the subject of financial allowances for women during pregnancy and lactation War, the council find, has aggravated a position which was already unsatisfactory More married women are entering industry or non-industrial occupations, and though some firms send expectant mothers off duty for some weeks before and after labour others do not, and in any case the mother cannot be prevented from taking up alternative work during the interval—except factory work which the law forbids for 4 weeks after a confinement Under existing arrangements the financial alternatives to ordinary wages are not adequate to make a woman willingly give up work, yet the health of the coming generation is going to be affected by the wellbeing of the mother during the last weeks of pregnancy and the time of lactation The financial difficulty falls on both insured women and the uninsured wives of insured and uninsured men Long-term planning to meet these difficulties, as the council recognise, is the province of the Interdepartmental Committee on Social Insurance and Allied Services, but there is need too, they feel, for an interim scheme to tide us over if we are to avoid producing a sickly generation The council holds that a woman should be debarred from working in any paid employment during the last 8 weeks of pregnancy and the first 8 weeks of lactation if she is to come to term fit for labour and if the milk flow is to be properly established They realise that extension of national health insurance legislation is hardly practicable just now, but they suggest that the approved societies might interpret more widely their duties in paying sickness benefit to insured pregnant women At present pregnancy is not recognised as incapacitating, and though many approved societies allow payment of benefit during the last three or four weeks of pregnancy some discourage even this concession so strongly that the women do not even make a claim Failure—whether real or anticipated—to obtain sickness benefit discourages women from giving up work as soon as they should in the interests of the child If a mother does give up work and then finds she is not eligible for sickness or unemployment benefit she is likely to be very short of money, moreover, her future title benefits under the NHI Act may be prejudiced for a thing up to two and a half years

Approved societies have agreed—on the request of Minister of Health—to relax their rules in regard accepting married women war workers as memb The council asks that the societies should go further announcing that as a war-time measure they are will to recognise the last 8 weeks of pregnancy as a period incapacity within the meaning of the act A certific from the doctor or midwife might be accepted as ev ence This would better the position for insured wome but women who are not insured are equally in need help, and so are those who have only qualified for minimum rate of sickness benefit or whose husbands not entitled to draw maternity benefit In any c full sickness and maternity benefits are not sufficient cover the extra expenses which spring up at the birth c baby The council would like an allowance to be m to all women during the last 8 weeks of pregnancy a the first 8 weeks of lactation—an allowance large enou with NHI benefit, to compensate the employed wom during her incapacity and to give the unemployed wom enough to meet additional expenses Such an allowan the council feels, would be an appropriate emerge supplement to children's allowances which may introduced as a temporary measure while the Int departmental Committee are deliberating on a m permanent policy

MAKING USE OF THE DISTRICT NURSE

THE full value of the district nursing service is not appreciated by doctors with panel practices, as chairm of the Greater London Provident Scheme for distr nursing, Lord Horder writes to remind us of this quotes the case of a worker at an aircraft factory w was off work for a fortnight with cellulitis During th time her doctor advised her to rest, but also to atte at his surgery—which meant a considerable daily wal Had he put her in touch with the district nurse she could have been spared these journeys, to the advantage of her condition The Ministries of Health and Labour have both insisted on the importance of close cooperation between the factory medical officer, nurse or welfare officer and the local district nurse and the panel doctor, and there is every reason for the panel doctor to make good use of the district nurse's help at a time when he himself is liable to be overworked A sympathetic liaison between them begun now will help to establish the new era in social medicine to which we all look forward

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University of London

At recent examinations the following were successful

D M R

L S Carstairs, R C M Hadden, G M Ross and D W Seth Smith

National University of Ireland

Dr Martin Folan has been appointed lecturer in clinical pathology at University College, Cork

Beit Memorial Fellowships for Medical Research

Dr A N Drury, F R S, has been appointed to the advisory board of the trust in place of the late Prof A J Clark Out of the 28 present Beit fellows 14 have now been seconded for whole time war work At a recent meeting of the trustee the following were elected

FOURTH YEAR FELLOWSHIPS

E G L Bywaters, MB Lond To continue his studies of crush injuries in relation to kidney function At the British Postgraduate Medical School, London

JUNIOR FELLOWSHIPS

D Herbert, PhD Camb To study the biochemistry of toxoids for active immunisation against gas gangrene At the Dunn Biochemical Laboratory, Cambridge University

F W Landgrebe, DSc Aberd To study the separation of po terior pituitary hormones, and their clinical uses At the medical school, University of Aberdeen

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The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

When the dosage is taken into account, the range of variation of the drug in the blood found in published studies is very similar to that recorded here. The figures of Kinsman and his colleagues (1939) for sulphapyridine are definitely lower on the average than ours They used an initial dose of either 2 or 4 g followed by 1 g four-hourly, and the slightly lower initial dosage may partly explain their lower values for the drug in the blood Also, their technical methods were likely to give rather low results

Brown and his colleagues (1939) found, as we do, that with maintenance doses of 6 g of sulphapyridine per day the level of the drug in the blood either rises or remains approximately steady Barnett and his colleagues (1939), using doses of sulphapyridine higher than ours in relation to body-weight, reported either accumulation or steady maintenance of blood sulphapyridine Volini and his colleagues (1940), comparing sulphapyridine with sulphathiazole at a dosage roughly the same as the lower dosage of our series, found, as we do, that the concentration of the drug in the blood is less well maintained with sulphathiazole than with sulphapyridine A similar tendency to falling levels on a dose of 6 g sulphathiazole daily is seen in the data of Sadusk and his colleagues (1940) and Finland and his colleagues (1941), and the fact that the concentration of the drug in the blood is lower with sulphathiazole than with sulphapyridine is shown also in the results of Flippin and his colleagues (1941) and Kinsman and Moore (1941) Data for sulphapyridine only are also given by Cullen and Wilson (1940), Flippin and others (1939), Ratish and others (1940), Finland and others (1940), and Abernethy and others (1939), and for sulphathiazole only by Gaisford and Whitelaw (1940), Callomon and Goodpastor (1940) and Scott and Jones (1940)

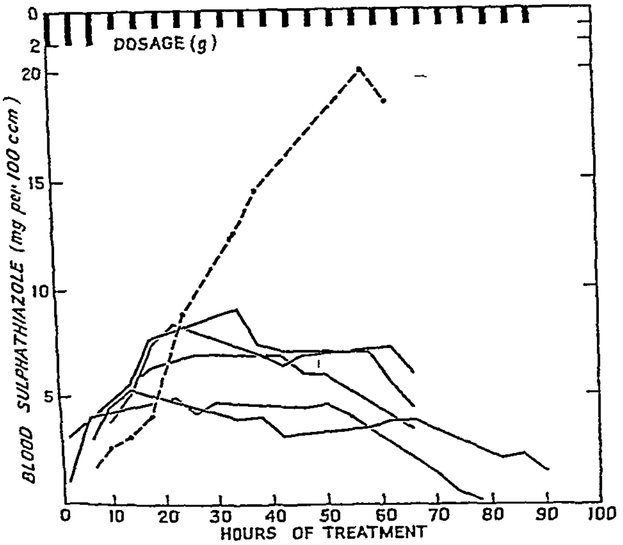

Fig 2—Blood sulphathiazole during treatment The dotted line shows the results for an old man who died

In our series only the free drug in the blood has been estimated As regards the bactericidal effect, only the free drug is concerned, but from the standpoint of toxicity the acetyl derivatives ("conjugated" drugs) ought also to be considered It was shown by Marshall and his colleagues (1938) that the acetyl derivative of sulphapyridine is as toxic as the free drug In the case of sulphapyridine, a large proportion of the total drug in the blood may be conjugated, and the conjugated form tends to accumulate with continued treatment (Brown et al 1939, Ratish et al 1940) Sulphathiazole is conjugated to a less degree than sulphapyridine in animals (Van Dyke et al 1939, Long et al 1940) The results of Sadusk and his colleagues (1940) and Strauss and his colleagues (1941) indicate the same in human subjects, but according to Flippin and his colleagues (1941) there is little difference between the two drugs on the average, though with sulphapyridine the proportion of the drug found in the conjugated form is more variable than with sulphathiazole Kinsman and Moore (1941) found a slightly greater degree of conjugation with sulphathiazole than with sulphapyridine, but in their results there was no undue accumulation of the acetyl derivative with either drug On the whole, it seems that there is somewhat less risk of accumulation of the acetyl derivative when sulphathiazole is used

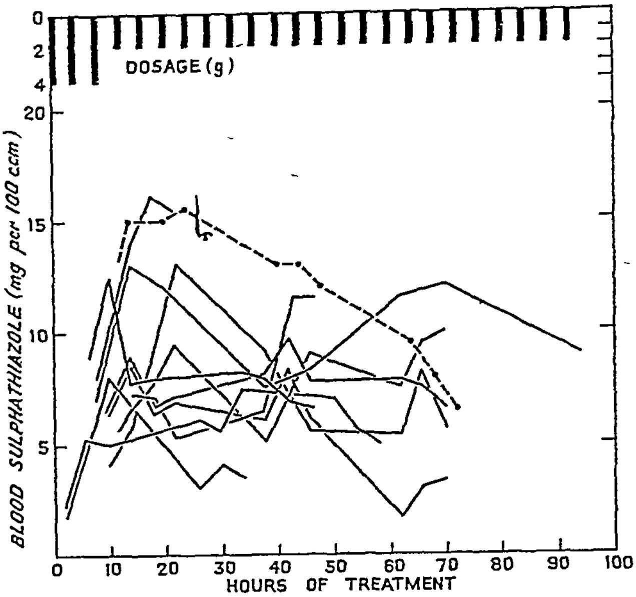

Fig 3—Blood sulphathiazole during treatment The dotted line refers to a patient who received 4 g instead of 2 g at the fourth dose

As regards the bactericidal effect, Long and Bliss (1940) found that the action of sulphathiazole was equal to that of sulphapyridine at the same concentration when tested on the pneumococcus in vitro It is difficult to determine with certainty what concentrations in the blood are required for the best therapeutic result Most observers consider that 6 mg per 100 c cm is adequate We regularly obtained higher values than this by giving three initial doses of 2 g sulphapyridine, followed by 1 g four-hourly With the same dose of sulphathiazole, 2 out of 6 cases failed to reach this level, and even in the group taking double the dose of sulphathiazole there were instances of failure to maintain a level of 6 mg per 100 c cm or more consistently

It is difficult to say whether it is an advantage to produce levels much above 6 mg per 100 c cm. In our short series of cases we found no correlation between the concentration of the drug in the blood and the rate of defervescence Callomon and Goodpastor (1940) and Flippin and his colleagues (1941) studied larger numbers and also found no advantage from the higher concentrations But this method of analysing the results is open to the objection that high blood levels are likely to be most frequent in patients with damaged kidneys, so that when the cases are classified according to the blood analyses the groups with higher figures are likely to include a higher proportion of patients gravely ill

In comparing the clinical results with the two drugs, the best evidence is given by the work of those who have used both drugs over the same period, since the results are not then affected by variations in the severity of the disease in different epidemics Such a comparison has been made by Volini and his colleagues (1940), who treated 164 patients with sulphapyridine and 169 with sulphathiazole, by Finland and his colleagues (1941), who treated 518 patients with sulphapyridine and 169 with sulphathiazole, by Flippin and his colleagues (1941), who treated 200 patients with sulphapyridine and 200 with sulphathiazole, and by Long and Haviland (1940) In these studies there was some difference in the intensity of the initial dosage, the total dose in the first 24 hours ranged from 7 to 12 g, but all used a maintenance dose of 1 g four-hourly in the succeeding period Under these conditions there was no significant difference between the two drugs as judged by mortality rates Flippin and his colleagues reported more rapid defervescence with sulphapyridine than with sulpha-

BLOOD CONCENTRATIONS OF THE DRUGS

Results for 13 patients treated with sulphapyridine are shown in table II and fig 1 There was a slight variation from the standard dosage in some cases , 7 received three initial doses of 2 g followed by 1 g four-hourly (fig 1) Of the remainder, 4 had only two doses of 2 g at the beginning, and 2 had four doses of 2 g All are included in fig 1, but the groups are separated in table II The two lowest concentrations of the drug in the blood were found in patients who received only the two initial doses of 2 g , but apart from this the variations did not seem to be related to the intensity of the early dosage, and the group may therefore be considered as a whole Individual variation in the concentrations reached with the same dosage was wide, but the characteristic result is a steep rise of the drug in the blood during the first twenty hours, and a more gradual rise later Some cases showed a more or less steady plateau in this later period , only a few showed falling levels on a maintenance dose of 1 g four-hourly The results shown in table II and fig 1 refer only to the period during which the stated dosage was maintained, but further analyses were made after reduction of the dose in some cases In these treatment was omitted during the night this always resulted in a fall of the concentration of the drug in the blood

TABLE II—RESULTS IN 13 PATIENTS TREATED WITH SULPHAPYRIDINE

Drug	Dosage (g)	Cases	Free drug in blood at			
			18–22 hr	42–46 hr	66–70 hr	90–94 hr
			mg per 100 c cm			
Sulphapyridine	221111	4	2 4–10 3	4 6–12 6	4 4–16 0	
	222111	7	6 1–15 3	11 5–13 5	10 0–20 7	8 0–15 5
	222211	2	6 5–10 7	8 8– 9 4	8 1–11 2	9 4–18 0
	Mean of all cases		9 0	11 2	12 2	13 0
Sulphathiazole	222111	(a) 1*	4 1–8 3	14 0	18 6	
		(b) 5	4 9–8 3	3 1–6 7	3 4–6 0	
	Mean for group (b)		6 5	5 5	4 0	
Sulphathiazole	444222	10	6 3–15 5	5 5–11 5	3 0–12 0	
	444422	1	15 0	13 0	8 0	
	Mean		8 5	8 1	7 8	

* A fatal case (elderly patient)

The first 6 patients treated with sulphathiazole received three initial doses of 2 g followed by 1 g four-hourly, and the results in this group are therefore strictly comparable with those for the group treated with sulphapyridine Of these 6 cases, 5 showed results which may be taken as characteristic (table II and fig 2) The concentration of the drug in the blood rose during a period ranging from fourteen to thirty-four hours, reaching a peak of 5–9 mg per 100 c cm , and then gradually falling The results are in striking contrast with those obtained for sulphapyridine , the maximum concentrations reached are lower, and with the maintenance dose of 1 g four-hourly the blood sulphathiazole falls, whereas with the same dose of sulphapyridine the blood sulphapyridine usually continues to rise

The sixth case in this group (the fatal case mentioned) shows a quite different result the blood sulphathiazole rose rapidly and continuously, reaching 20 mg per 100 c cm just before the patient's death This accumulation of the drug in the blood may have been due to renal insufficiency, but we have no evidence on this point It is impossible to say whether the high concentration of the drug in the blood contributed to the fatal result, or whether the accumulation of the drug was merely an incidental effect of the patient's condition

When it became evident that the dosage of sulphathiazole used for these first 6 cases was not producing such high concentrations in the blood as were obtained with the same doses of sulphapyridine, it was decided to double the dosage for the remainder of the patients treated with sulphathiazole ; 10 patients received the higher dosage, namely, three initial doses of 4 g followed by 2 g four-hourly (table II and fig 3) There is great individual variation both in the maximum levels of the drug in the blood, and in the form of the curve obtained when the concentrations of the drug in the blood are plotted against the duration of treatment The initial rise of the drug in the blood is steep , a peak is reached early, often in less than ten hours After the early peak the level falls, usually quite steeply Some cases show a secondary rise beginning after about thirty-eight hours of treatment Although this group of patients received the higher dosage, they show distinctly lower levels of the drug in the blood than the patients receiving sulphapyridine in lower dosage, except in the earliest stage of the treatment Moreover, the steady accumulation of the drug in the blood often found with a maintenance dose of 1 g sulphapyridine four-hourly is not found with double the dose of sulphathiazole

The results given in table II and fig 3 are those found during the period of the standard dosage In 7 of the cases further blood analyses were made after reduction of the dose, either by omission of the night doses (2 cases) or by reduction from 2 g to 1 g four-hourly Reduction by either method caused a fall in the concentration of the drug in the blood , this confirmed the earlier observation that 1 g of sulphathiazole four-hourly is not sufficient to maintain a steady level of the drug in the blood

DISCUSSION

Like other workers, we have found great variation in the concentrations of free sulphapyridine or sulphathiazole in the blood of patients treated with the same drug in the same dosage This is not surprising, as variations in the rate of absorption and excretion are to be expected in patients who are severely ill But in spite of the individual variation, it has been shown that both sulphathiazole and sulphapyridine in the blood rise rapidly under the treatment to effective therapeutic levels, though these levels are much less readily maintained with sulphathiazole than with sulphapyridine The curves shown (figs 1–3) strongly suggest that sulphathiazole is absorbed as rapidly as sulphapyridine but is more rapidly excreted We have made no analyses of the drugs in the urine in our cases, but the work of others has shown that sulphathiazole is more rapidly excreted than sulphapyridine both in animals (Van Dyke *et al*, 1939) and man (Spink and Hansen 1940, Strauss *et al* 1941, Kinsman and Moore 1941)

Reports on the concentrations of sulphapyridine and sulphathiazole in the blood of patients under treatment have been made recently by others, and there are data available for large numbers of cases studied at different stages of treatment On the whole the early period of treatment has been more fully studied than the later stages, and although all stages are represented there are not many records of the changes in concentration of the drug in the blood in the same patients throughout the treatment

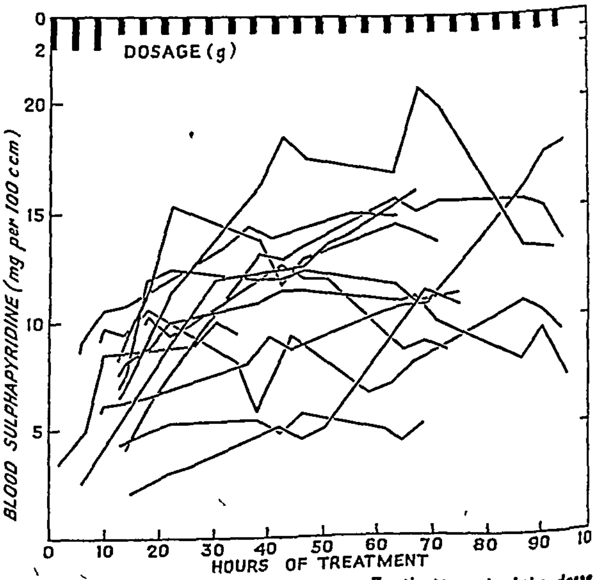

Fig 1—Blood sulphapyridine during treatment 7 patients received the dosage shown , 4 had 1 g instead of 2 g at the third dose , two had 2 g instead of 1 g at the fourth dose

1,960,000; Hb 50%, colour-index 1 3, white cells 11,200, normal differential count red cells irregular in shape and size, normoblasts numerous, with some megaloblasts, myeloblasts and punctate basophilia; reticulocytes under 1% of red cells Free acid in normal amount in gastric juice Pyrexia continued for a few days Given diet rich in protein, with half a pound of liver each day, and 'Ventriculin (PDCo) 1 vial t d s She improved very much both clinically and hæmatologically, and by the following August felt quite well and had a normal blood count All specific treatment was discontinued

She has been seen from time to time (last, in September, 1941), and has kept well with a normal blood-count No further pregnancy

CASE 2—Age 27 A hawker. Always healthy Three normal pregnancies and confinements Fourth child born on May 18, 1934; well during this pregnancy No antenatal care, normal confinement no undue blood loss Pallor noticed directly after confinement On admission to hospital on the same day she was extremely ill with well marked pallor and pyrexia Red cells 925,000, Hb 30%, CI 1 16; halo 8 19 μ, white cells 10,400. normal differential count, red cells irregular in shape and size; megaloblasts and many normoblasts seen, reticulocytes under 1% Free acid in gastric juice was below normal Well marked periostitis of the tibiæ, Wassermann and Kahn reactions strongly positive 'Hepatex' (Evans) 5 c cm given intramuscularly each day for a week and then hog s stomach 2 dr t d.s. Pyrexia disappeared; blood value quickly increased All specific treatment was then discontinued

In August. 1941, she replied to a questionnaire that both she and the child had been quite well since she left hospital, she had had no further pregnancies She did not submit to antisyphilitic treatment which was advised

CASE 3—Age 37 Had had 5 children, normal pregnancies and confinements Health always good Last child born July 16, 1935 Some swelling of feet during last three months of this pregnancy Had antenatal care No undue blood loss Since confinement, increasing weakness, breathlessness, swelling of feet. pallor and soreness of tongue Admitted to hospital Oct 23, 1935, extremely ill Very pale with slight icteric tinge of the skin, much glossitis, numbness and paræsthesia of forearms and hands, but nothing objective found in the rest of the nervous system, except retinal hæmorrhages Spleen just palpable Red cells 750,000, Hb 19% CI 1 2, white cells 5600; normal differential count, many nucleated red cells, considerable anisocytosis, poikilocytosis and polychromasia, reticulocytes under 1% of the red cells. Complete absence of free acid from gastric juice Child healthy with no sign of anæmia Patient was transfused, and hepatex (2 c cm) was injected intramuscularly each day Good reticulocyte response Patient's condition began to improve and temperature to settle, in a month's time blood-count had become normal. A second test-meal showed a normal amount of free acid Specific treatment discontinued.

Both she and the child remained well In 1936 she again became pregnant She remained well with a normal blood-count, hepatex, 2 c cm, was given once every two weeks as a prophylactic In October she was delivered of a healthy child, normal pregnancy and puerperium Another child was born in 1940 with no ill effect on her health No specific treatment given during this pregnancy Last seen in 1941, health then good and blood still normal.

CASE 4—Age 33 Health had always been good First child born Dec 31, 1934 Healthy pregnancy with antenatal care and a normal confinement Afterwards she was weak and pale with shortness of breath and lemon coloration of the skin On admission to hospital on Feb 4, 1935, she was very ill with high pyrexia Petechial hæmorrhages into the skin, hæmorrhages into both retinæ, and glossitis Red cells 730,000, Hb 24%, CI 1 6, halo 7 6 μ, white cells 6400, differential count normal, red cells very irregular in shape and size with polychromasia and megalocytosis. reticulocytes 1 5% of the red cells, platelets 80,000, fragility of red cells not increased Van den Bergh reaction was practically negative No free acid found in gastric juice Hepatex, 5 c cm at first intravenously and then intramuscularly, given each day Brisk reticulocyte response General condition improved and by the end of March, when she left hospital blood was normal A test-meal showed normal acidity The baby was healthy

Her doctor reported in September, 1941, that she had remained well without any specific treatment No further pregnancy

CASE 5—Age 32 Had always been healthy Normal pregnancy and puerperium with the first child Second child born April 6, 1937 During the last weeks of this pregnancy pale with increasing weakness and shortness of breath, much vomiting and taking little food On admission to hospital on April 10 she was extremely ill Red cells 1,150,000, Hb 23% CI 1 1, halo 7 4 μ; white cells 12,000 normal differential count, red cells irregular in shape and size, with 400 normoblasts per c.mm, and punctate basophilia, reticulocytes under 1% Van den Bergh test gave a faintly positive indirect reaction Small amount of free acid in gastric juice Two blood-transfusions given at short intervals and hepatex, 4 c cm injected each day By the end of July blood was normal All specific treatment then discontinued Child healthy

Since then the patient has remained well with a normal blood-count No further pregnancy

CASE 6—Age 33 Had always been well. Normal first pregnancy until the last two months, when she began to be short of breath, Normal confinement on Dec 16, 1938 No undue loss of blood. Manual removal of placenta Increased pallor and pyrexia after delivery On admission red cells 2,000,000, Hb 42%, CI 0 91 white cells 6300, differential count normal poikilocytosis, anisocytosis, normoblasts and megaloblasts seen, reticulocytes under 1% Test-meal showed free acid though in diminished amounts Child was healthy Hepatex 4 c cm, given each day intramuscularly, satisfactory reticulocyte response Blood-count rose to full value Specific treatment then discontinued

She has remained well with a normal blood count No further pregnancy

CASE 7—Age 31. First child, normal pregnancy and puerperium Good health until the second pregnancy Husband out of work, food at home especially meat, had been short For the last two months of the pregnancy she had been short of breath, weak and pale, and was treated for toxæmia of pregnancy by being kept in bed on a milk diet Normal confinement on May 1, 1941 Then condition suddenly became worse Faint icteric tinge of the skin Red cells 650,000, Hb 24%, CI 1 8; white cells 6500; halo 7 8 μ poikilocytosis, polychromasia and anisocytosis. normoblasts 180 per c.mm, reticulocytes 1% of red cells Test-meal showed free acid but in diminished amount Hepatex, 4 c cm given intramuscularly each day. Satisfactory reticulocyte response Blood value rose and general condition improved Specific treatment then discontinued

When last seen in September, 1941 she had been well since leaving hospital No further pregnancy Child had remained well

CASE 8—Age 29 Five normal pregnancies Had always been well Became pregnant again in May, 1941. After the first month undue tiredness and lack of energy. Miscarriage on Sept 4, no undue hæmorrhage Became very pale and short of breath directly afterwards Red cells 2,100,000; Hb 45%; CI 1 09 white cells 5300, normal differential count, well-marked anisocytosis and poikilocytosis, normoblasts 100 per c.mm, reticulocytes under 2%, platelets diminished Test meal showed normal acidity Brisk reticulocyte response followed daily injections of 4 c cm of hepatex. Rapidly improved When her blood-count became normal specific treatment was discontinued She remains well

CASE 9—Age 28 Had always been well until the last two months of the second pregnancy, when the legs swelled and she became somewhat weak and pale Normal confinement on Aug 30 1941 No undue blood loss Child healthy Admitted to hospital a month later as symptoms had become worse Glossitis and well-marked retinal hæmorrhages Red cells 2,100,000, Hb 40%, CI 0 95 white cells 5300 normal differential count, anisocytosis and poikilocytosis, normoblasts 50 per c.mm, platelets diminished Biopsy of bone-marrow showed increased cellularity with megaloblastic hyperplasia Acid in gastric juice below normal Hepatex, 4 c cm, injected intramuscularly each day. Brisk reticulocyte response followed Improved clinically and hæmatologically By November the blood was normal and specific treatment was discontinued A second test-meal showed a normal amount of acid. She remains well

COMMENT

Pernicious anæmia of pregnancy usually occurs in multiparæ generally in the middle or later years of thiazole Garvin (1940) also compared the two drugs, treating 40 patients with sulphathiazole and 62 with sulphapyridine He recognised that it was necessary to use a higher dosage of sulphathiazole than of sulphapyridine in order to get approximately comparable concentrations of the drug in the blood For sulphapyridine he used one initial dose of 2 g followed by 1 g four-hourly, and for sulphathiazole one initial dose of 4 g followed by 2 g four-hourly There was no significant difference in the fatality-rates in the two groups, but there was more rapid defervescence with sulphapyridine than with sulphathiazole Wagoner and Hunting (1941) used sulphapyridine and sulphathiazole in the treatment of pneumonia in children They aimed at a concentration of 4–6 mg per 100 c cm in the blood, adjusting the dosage as required The two drugs were equally effective.

Evidence of the incidence of toxic effects for both sulphapyridine and sulphathiazole has been given by Flippin and his colleagues (1940, 1941), Finland and his colleagues (1941), Garvin (1940), Wagoner and Hunting (1941), and Kinsman and Moore (1941) For sulphapyridine only, the toxic effects are analysed also by Finland and his colleagues (1940), and for sulphathiazole only by Volini and his colleagues (1940), Reinhold and his colleagues (1940), Pepper and Ham (1940), Spink and Hansen (1940), Scott and Jones (1940), and Callomon and Goodpastor (1940) Taking all these results together, the most striking difference is the much greater incidence of nausea and vomiting with sulphapyridine The rarer toxic effects—damage to the kidneys, damage to the hæmopoietic tissues, drug rashes, drug fever and mental symptoms—are all slightly commoner with sulphapyridine than with sulphathiazole However, most of these observers used the two drugs at approximately the same dosage, so that the average concentration of the drug in the blood would be lower in the groups treated with sulphathiazole Garvin's series, in which the dosage of sulphathiazole was double that of sulphapyridine, also showed a higher incidence and greater severity of vomiting with sulphapyridine than sulphathiazole There was little difference in the incidence of dermatitis (though there were too few cases of dermatitis in either group for a true comparison) Crystals of the drug in the urine were found much more often with sulphathiazole than with sulphapyridine, and microscopic hæmaturia was rather commoner with sulphathiazole Wagoner and Hunting (1941) found vomiting commoner with sulphapyridine than sulphathiazole, although they adjusted their dosage to get similar concentrations of the drugs in the blood

In conclusion, it is evident that in order to get the same concentration of the drug in the blood, sulphathiazole must be used in much higher dosage than sulphapyridine With sulphathiazole, the maintenance of an effective blood level is more difficult, and it depends on a balance whereby greater amounts are absorbed and excreted than with sulphapyridine , hence there may be a greater danger of crystallisation of the drug in the kidneys when sulphathiazole is used Also, it becomes more important to check the progress of the treatment by blood analyses when sulphathiazole is used, in order to avoid excessive retention of the drug if the kidneys are damaged The only advantage of sulphathiazole seems to be a less tendency to cause vomiting, but even this advantage is less striking in the experience of workers who increased the dosage of sulphathiazole in order to compensate for its more rapid excretion

SUMMARY

Sulphapyridine has been compared with sulphathiazole in the treatment of 30 cases of lobar pneumonia

The concentrations of free sulphapyridine and free sulphathiazole in the blood of the patients have been followed throughout the course of treatment

Effective concentrations of the drug in the blood are much more readily maintained with sulphapyridine than with sulphathiazole, and this is explained by the more rapid excretion of sulphathiazole

The present series is too short for an adequate evaluation of clinical results, but recent reports on much larger numbers are reviewed, and it is concluded that sulphathiazole has no advantage over sulphapyridine as a chemotherapeutic agent Sulphathiazole has less tendency to cause vomiting

We wish to thank Dr J A Charles, medical officer of health to Newcastle on-Tyne, for giving us the opportunity to investigate patients at the Newcastle General Hospital and the City Hospital for Infectious Diseases, and Messrs May and Baker for supplies of sulphapyridine ('M & B 693') and sulphathiazole ('M & B 760')

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THE GRAVE ANÆMIAS IN PREGNANCY AND THE PUERPERIUM

REPORT OF 17 CASES

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In the last few years an increasing number of cases of grave anæmia of pregnancy have been reported, but the condition is uncommon Full reviews of this subject have been given by Wilkinson (1932), Whitby (1932), Witts (1932), and by Stevenson (1938), who, during 1928–34, studied 30 cases, the largest number reported by any one observer

During 1934–41 I have studied and followed up 17 patients suffering from grave anæmias of pregnancy These fall into two groups cases 1–9 are of the pernicious variety , cases 10–17 belong to the hæmolytic group In each patient a critical search was made to exclude infection, carditis, nephritis and other diseases which could possibly have been factors in the production of a severe anæmia

Temporary Pernicious Anæmia of Pregnancy

In order to save space, only positive clinical findings are given Intermediate blood and other reports are omitted Fresh blood was used for all transfusions, from donors of the same group as the patients , cross matching was performed in every case No difficulty was experienced in grouping The blood was always given slowly by the drip method, and no abnormal reaction ever followed

Case 1—Age 31 Two former pregnancies Pyelitis during the first , second normal Otherwise healthy In May, 1933, she again became pregnant Much vomiting November, premature delivery of stillborn twins No undue hæmorrhage or other complications Since then increasing weakness, breathlessness and pallor On admission to hospital on May 14, 1934, she was very ill Slight lemon yellow tinge of skin , glossitis , spleen palpable Red cells

When last seen in September, 1941, her health had remained good and there was no anæmia. No further pregnancy.

CASE 17.—Age 34. Had always been well. First pregnancy and confinement on Feb. 22, 1941, was normal. Directly afterwards she became weak, short of breath and pale, with an icteric tinge. Red cells 500,000; Hb 30%; CI 1·0; halo 8·0 μ; poikilocytosis and polychromasia; normoblasts 230 per c.mm.; reticulocytes 12%; platelets not reduced; fragility of red cells normal. Strongly positive indirect van den Bergh reaction. Injections of liver extract given each day. She improved and left hospital with red cells 3,750,000; Hb 60%; white cells 5800; no abnormal red cells; reticulocytes 4%. The child was well.

No reply was received to a questionnaire sent in September, 1941.

COMMENT

It has already been pointed out (Lescher and Osborn 1939) that the hæmolytic anæmias form a somewhat unsatisfactory group, since there is actually no very clear and accepted standard as to what constitutes clinical hæmolysis. Even when its existence is accepted there is seldom direct evidence of it (such as hæmoglobinæmia, hæmosiderinuria and the presence of ghost cases) since it occurs rarely in the blood-stream itself. Acute hæmolytic anæmia occurs, of course, in conditions other than pregnancy. There is no evidence that a hæmolysin ever develops in the maternal or fœtal structures. Neither nutritional and digestive defects nor infection seem to play any part in its production.

Prognosis, Treatment and Differentiation

Patients with these grave anæmias of pregnancy should not be allowed to drift in the hope of spontaneous cure; for the old belief that a cure results after delivery without specific treatment, is without foundation. For example, cases 1, 10, 12, and 13 were very ill for some months after confinement, and no improvement took place until specific treatment was started. Before the renaissance in the treatment of Addison's anæmia the maternal mortality of patients suffering from temporary pernicious anæmia of pregnancy was high, and so was the fœtal death-rate. Now with accurate diagnosis and adequate treatment, the prognosis has much improved. In the 9 cases reported here the maternal death-rate was nil. In cases 1 and 8 the children were stillborn. There is no reliable evidence that the children inherit either type of anæmia.

Temporary pernicious anæmia of pregnancy will respond well to adequate treatment with liver preparations, although Davidson has called attention to similar cases who were refractory to this treatment; and there is a reasonable chance of the patient bearing a healthy child. This treatment should be continued until the blood is normal and the pregnancy over, after which it can be discontinued, since in this type of anæmia, unlike Addison's anæmia, relapses will not occur. If the anæmia is due to the absence from the diet of extrinsic factor (as it may have been in cases 1, 5 and 7), the addition of meat protein or 'Marmite' to the diet, or treatment with liver, should bring about improvement. Blood-transfusions were resorted to as an emergency measure in cases 3 and 5, because these patients were very ill; but with a better knowledge of the efficiency of liver treatment these may have been unnecessary.

While the ætiology of Lederer's anæmia remains unknown treatment must necessarily be empirical. Patients often react dramatically, especially after parturition, to a blood-transfusion, repeated if necessary. Even though some of these patients were desperately ill, they all recovered with the exception of one (case 15), and she was moribund on admission to hospital. Case 14 did not respond quickly, possibly because of the coincident sepsis. It is true that liver and iron were given to several of the patients reported above, together with blood-transfusions. But in cases 10, 11 and 13 liver and iron and a generous diet were used for several months with no improvement until treatment with blood-transfusions was started; in case 17, it is true, recovery followed the use of liver alone.

Patients suffering from either of these grave anæmias, when treated promptly and energetically, may be allowed to go to term, and there is a reasonable chance of the patient bearing a healthy child. A critical review of published work supports, on the whole, the view that these anæmias, especially the pernicious variety, may recur in subsequent pregnancies; but with suitable antenatal supervision, including blood-examinations, the necessary treatment can be given early, so that these patients should be able to complete their pregnancies successfully. In this series only 2 patients became pregnant subsequently. There was no return of the anæmia.

From the history and clinical signs alone a differential diagnosis cannot be made with certainty between temporary pernicious anæmia and hæmolytic anæmia, save that in most cases of the hæmolytic type in the above series the patient had an icteric colour as compared with the slightly lemon tinge seen in the patients with pernicious anæmia. Glossitis was found in 4 of the temporary pernicious anæmia cases whereas it occurred in only 1 suffering from the hæmolytic type. With both varieties the anæmia was severe, and most of the cases were of the megalocytic type. The red cells showed considerable irregularity in size and shape, with normoblasts and occasionally punctate basophilia. Megaloblasts were rather more prominent in the hæmolytic type. No spherocytosis was seen. Estimation of the fragility of the red cells was of no help.

The main differentiating points found in the blood examinations were three. First, in the hæmolytic type of anæmia not under specific treatment, the percentage of reticulocytes was always much raised; this was so in every case in the series. In temporary pernicious anæmia, however, these cells were not increased unless liver had been given recently, and even then the rise was not sustained for longer than a few days; all the cases of temporary pernicious anæmia in which this test was tried gave a typical reticulocyte response followed by a rise in the number of the red cells. Secondly, in temporary pernicious anæmia the serum bilirubin is within normal limits or only slightly raised, and there is only a faint indirect van den Bergh reaction. In the hæmolytic type, however, since the anæmia is caused by hæmolysis of the red cells with the liberation of hæmoglobin, the serum bilirubin is naturally increased and there is a strongly positive indirect van den Bergh reaction. Had more samples of bone-marrow been obtained by sternal puncture, they would no doubt have provided information useful in differentiating these two types of anæmia. One would have expected, in the pernicious type, a mixed erythroblastic reaction with great increase in the number of megaloblasts; whereas in hæmolytic anæmia, although there are signs of great marrow activity, the hyperplasia is normoblastic in type (cases 9 and 15). Thirdly, the two varieties of anæmia react differently to specific remedies: liver extract given parentally in large doses will raise the level of the blood to normal in temporary pernicious anæmia, but it will not have this effect in the hæmolytic type occurring during pregnancy—for such cases blood-transfusions are necessary.

SUMMARY

A series of 17 cases of grave anæmia associated with pregnancy has been reported; 9 with temporary pernicious anæmia and 8 hæmolytic anæmia (Lederer).

In 8 cases the symptoms and signs of the anæmia started before delivery, generally in the last 3 months of pregnancy, and progressed generally rapidly, after parturition. In the remainder the anæmia developed suddenly, often dramatically, after the confinement.

No patient had received adequate antenatal supervision and treatment. No blood-examinations had been made before admission to hospital; increased facilities for blood-examinations during pregnancy are needed.

It is important to determine the type of anæmia before beginning treatment. There is a specific treatment for each of the types of anæmia described, which if given early should much reduce the maternal and fœtal mortality.

With adequate antenatal supervision, including blood-examinations, a woman who has previously suffered from one of these grave anæmias should be able to undergo subsequent pregnancies successfully.

My thanks are due to Mr N. Edwards for permission to study several of the patients who were admitted under his care.

References at foot of next page

reproductive life In this series the average age was 31 years The early signs are often insidious, appearing usually during the last three months of pregnancy, they may easily be missed Some patients go through pregnancy without serious inconvenience In others, the anæmia develops suddenly, often dramatically, soon after delivery (cases 2, 3, 4 and 6) The symptoms, signs and changes in the blood are similar to those found in Addison's anæmia In the pernicious anæmia of pregnancy, however, the mean diameter of the red cells may approach more to normal, and there is as a rule no leucopenia There are no signs of hæmolysis The bone-marrow is similar in both diseases, but in pernicious anæmia of pregnancy, unlike Addison's anæmia, no organic lesions of the brain or spinal cord have been reported except in one case (Strauss and Castle 1933), though mild paræsthesias are occasionally found (case 3) Severe antepartum or postpartum hæmorrhage and sepsis are as a rule remarkable by their absence

The similarity of Addison's anæmia to this temporary pernicious type and the fact that in the latter there is often a derangement of gastric function, shown by the diminution or absence of hydrochloric acid in the test-meal, suggest that an analogous mechanism is likely to be involved (Strauss and Castle 1933) In the cases reported here, hydrochloric acid was found in normal amounts in only 2, in 2 it was absent and in 5 deficient in amount Deficiency of extrinsic factor in the diet might have been responsible, at any rate partially, for the anæmia in some patients (cases 1, 5 and 7) After delivery the level of the acid may rise to normal (cases 3, 4 and 9)

Acute Hæmolytic Anæmia of Pregnancy

The following 8 patients were found to be suffering from acute hæmolytic anæmia, of the type described by Lederer (1930)

Case 10—Age 28 Shortness of breath and unusual pallor towards end of first pregnancy Normal confinement on May 12, 1939 Child healthy No undue blood loss Symptoms became worse in spite of treatment with liver and iron Admitted to hospital on July 7 Very ill with pyrexia, icteric tinge of the skin and glazing of the tongue Red cells 1,500,000, Hb 35%, CI 1 2, halo 7 6 μ, red cells irregular in shape and size with many normoblasts and megaloblasts, reticulocytes 10% of red cells, platelets not reduced Strongly positive indirect van den Bergh reaction Normal acid in gastric juice A course of hepatex, 4 c cm, intramuscularly each day and several blood-transfusions given Condition improved and pyrexia disappeared Blood value rose to normal

When last seen in September, 1941, her health had remained good There had been no further pregnancy

Case 11—Age 30 Three children Pregnancies and confinements normal Health good until pleurisy during the seventh month of the fourth pregnancy Progressive weakness, pallor and shortness of breath since Normal confinement on Nov 25, 1938 Child healthy In spite of repeated injections of liver her condition deteriorated, and she was admitted to hospital on Feb 3, 1939, extremely ill Red cells 1,200,000, Hb 20%, CI 0 83, poikilocytosis, anisocytosis and polychromasia well marked, megaloblasts and normoblasts present, reticulocytes 15% of red cells, mean corpuscular thickness normal, no spherocytes seen, fragility of red cells slightly increased Indirect van den Bergh reaction present Test meal showed no free acid Three blood transfusions given, with liver extract and iron A month later her condition had vastly improved Red cells 3,500,000, Hb 70%, no immature cells seen

She has remained well with a normal blood count and without any specific treatment No further pregnancies

Case 12—Age 35 Normal first pregnancy and confinement on Feb 16, 1939 No antenatal care No undue blood loss Since then, pale, weak and short of breath, with pyrexia and an icteric colour Red cells 1,200,000, Hb 25%, CI 1 04, halo 7 6 μ, white cells 13,000, normal differential count, well marked anisocytosis, poikilocytosis and polychromasia, normoblasts, stippling of red cells and myelocytes, reticulocytes 20% of red cells, platelets 250 000, fragility of red cells normal Hydrochloric acid in normal quantities in the test meal She improved after treatment with several blood-transfusions Pyrexia diminished, blood increased in value and reticulocyte count diminished The child remained well

In September, 1941, she replied to a questionnaire that her health had remained good Another healthy child was born in June, 1941 No antenatal care Normal pregnancy and confinement

Case 13—Age 35 Second child born Nov 29, 1938 Normal pregnancies and confinements No undue blood loss No antenatal care Lost energy and became short of breath and increasingly pale directly after the second confinement Treated with large doses of liver, iron, vitamin C and a generous diet No improvement Admitted to hospital on June 29, 1939 Red cells 1,390,000, Hb 40%, CI 1 4, halo 8 3 μ, white cells 4000 with a normal differential count, red cells irregular in shape and size, with many normoblasts and megaloblasts, reticulocytes 15% of red cells, platelets 405,000, strong indirect van den Bergh reaction Normal amount of free acid in gastric juice Several blood transfusions given She left hospital well with a normal blood count

In September, 1941, she replied to a questionnaire that she and the child had remained well No further pregnancy

Case 14—Age 20 Health good until a miscarriage in June, 1939, when three months pregnant No serious hæmorrhage Admitted to hospital a week later on account of abdominal pain and pyrexia A mass felt in the left fornix Normal red cell count with a leucocytosis of 21,000 per c mm Cultures from the cervix gave a growth of hæmolytic streptococci, but blood cultures made under aerobic and anaerobic conditions remained sterile The uterus was explored and she was given sulphanilamide 1 g 4 hourly for a week, and nursed in the fresh air Her condition deteriorated, blood-count started to fall and jaundice developed On July 30, red cells 1,340,000, Hb 37%, CI 1 4, halo 8 6 μ, red cells irregular in shape and size, normoblasts 2500 per c mm, megaloblasts present, reticulocytes 25% of the red cells, no spherocytosis or ghost cells seen Van den Bergh test showed a strongly positive indirect reaction Urine contained albumin and urobilin Liver and spleen enlarged Treated with blood transfusions, liver extract and iron Improvement and relapses followed In October she left hospital much improved, with a normal blood count

In September, 1941, in answer to a questionnaire, she replied that she had quickly regained her health after leaving hospital and had remained well No further pregnancy

Case 15—Age 29 Health had always been good Periods regular, the last being four weeks before admission On Feb 1, 1940, excessive vaginal hæmorrhage Rapidly became pale and jaundiced She lived in an isolated farm and owing to the depth of snowdrifts the doctor, after several attempts, could only reach her at the end of the second day With the greatest difficulty she was removed to hospital the next day and arrived in a state of extreme shock All bleeding had stopped Pallor and jaundice were severe, and in spite of resuscitation, including a blood transfusion, she died within a short time of admission A blood examination made shortly before death showed red cells 1,260,000, Hb 36%, CI 1 4, halo 8 0 μ, white cells 64,000, many normoblasts and megaloblasts, reticulocytes 30% of the red cells, platelets normal Strong indirect van den Bergh reaction

At autopsy the spleen was typical, histologically, of the kind seen in hæmolytic anæmia (Lescher and Osborn 1939), gross engorgement of the sinusoids, blood cells were being rapidly destroyed by the littoral cells, abundant hæmosiderin granules Bone marrow deep red and cellular, normoblasts predominated, though all the series were represented Acini and ducts of the breasts were distended with milk The cervix admitted the tip of the little finger No trace of placental elements found

Case 16—Age 24 Normal first pregnancy and confinement Jan 20, 1941 No undue hæmorrhage Child healthy Patient became pale and breathless soon after delivery, anæmic and jaundiced Pelvic cellulitis with swelling of the right leg Red cells 3,000,000, Hb 53%, CI 0 88, halo 7 8 μ, white cells 21,400, megalocytosis, anisocytosis and poikilocytosis, normoblasts 200 per c mm, with numerous reticulocytes, mean corpuscular thickness and volume increased Strongly positive indirect van den Bergh reaction Smears from cervix showed streptococci, but there was no growth Blood cultures negative Sulphanilamide treatment was started and she was given two blood transfusions In a fortnight she began to improve and the temperature fell She left hospital on March 3, much better with an almost normal blood count The child was well until tea-time. On being transferred to a smaller ward with better supervision and extra diet they improved and there was no further trouble. This is a point of some importance when large numbers of uncooperative patients are being treated.

TABLE I—RESULTS IN 200 CASES

Diagnosis	All cases		Recovered		Imp		Imp in hospital		Not imp	
	M	F	M	F	M	F	M	F	M	F
Schizophrenia	41	73	0	4	3	5	10	16	28	48
Affective psychoses—										
Mania	6	13	4	10	0	2	1	1	1	0
Depression	8	37	6	29	1	5	0	0	1	3
Mixed	2	9	1	3	1	2	0	0	0	4
Psychoneuroses	6	5	1	1	3	1	0	1	2	2
Total	200		59		23		29		89	

M and F = male and female. Imp = improved.

RESULTS

The results of treating 63 males and 137 females are shown in table I. Cases have been classified in 5 diagnostic groups, but in the schizophrenic and affective illnesses only are numbers large enough to allow conclusions to be drawn. Under the heading "depression" are grouped melancholias and depressions, including involutional melancholia from whatever cause, and depressive phases of the manic-depressive psychosis; the schizophrenic group has not been subdivided.

The criteria of results are four: complete remission of symptoms with the return of full working capacity; partial recovery sufficiently great to enable the patient to remain outside hospital; maintained improvement social or ideational in patients still hospitalised; no improvement. Of the 200 patients, 20 men and 62 women were discharged from hospital; of these 12 men and 47 women made a complete recovery and none of these have since relapsed. This represents a discharge-rate of about 40% of all patients treated, irrespective of the nature or duration of the mental illness. It will be seen however that this figure is chiefly determined for the better by the proportion of affective psychotics treated and for the worse by the schizophrenics.

Schizophrenia.—Of 114 schizophrenics of both sexes only 12 left hospital, 4 women alone being considered to have recovered. The remaining 102 required institutional supervision, but in 26 of these some degree of sustained benefit was observed. In other words, treatment of 114 patients has been justified by some improvement in 38 cases, of which only 4 showed full remission.

TABLE II—RESULTS IN SCHIZOPHRENIA

Duration of illness	All cases		Recovered		Imp		Imp in hospital		Not imp	
	M	F	M	F	M	F	M	F	M	F
Under 1 year	5	12	0	4	0	1	1	1	4	6
1–2 years	12	16	0	0	3	3	4	6	5	7
Over 2 years	24	45	0	0	0	1	5	9	19	35
Total	114		4		8		26		76	

It is debatable whether shock treatment of chronic schizophrenics is really worth while when allowance is made for spontaneous remissions. This becomes even more dubious when it can be reported that 2 schizophrenic women whose psychosis was quite unaffected by persistent shock therapy made spontaneous remissions several months later; one is now serving in the Forces and the other is almost fit to leave hospital. Moreover, 3 subjects, 2 women and 1 man who had been in hospital for upwards of six years failed to improve in any way with long courses of shock treatment, but have shown considerable and it seems increasing improvement after recent prefrontal leucotomy.

The duration of symptoms is usually taken into account in making a prognosis for shock therapy. Not all the recent cases of schizophrenia admitted to hospital were treated. A few were rejected on grounds of physical unfitness, permission for treatment was refused in 2, and as a small number were improving spontaneously it was not necessary to institute shock therapy. This explains the disproportionately small number of early cases in the series; the number treated who had been ill for less than a year is only 17. It is noteworthy that the only schizophrenics who recovered belonged to this group, and that the results of treatment are very much worse in illnesses of longer duration (table II). Nevertheless, since 13 out of 17 recent cases failed to improve at all it was not possible to make an optimistic prognosis in any clear-cut case of schizophrenia. No doubt some of the subjects classified in the mixed psychoses could be included with the schizophrenics, thereby influencing the results for the better.

On the whole, although this series contains a disproportionate number of chronic cases, it has been worth while treating schizophrenia in the hope of improvement without necessarily hoping for recovery.

Affective psychoses.—Of 64 patients with affective psychoses treated, 11 men and 46 women were discharged including 10 men and 39 women recovered; 2 men and 3 women failed to improve, 1 of each sex improved but still required hospital care because of the short periods of remission between maniacal phases. Most affective psychotics therefore recover or show much improvement with electrical shock treatment so that cases which fail to respond are of particular interest. In this series, of the 3 women, 1 had a temporary remission and relapsed; she now presents the clinical picture of Simmonds's disease. The second is an agitated melancholic with additional obsessional features whose symptoms have not altered for more than 10 years. The third was a reactive depressive who failed to improve with shock treatment, but afterwards made a spontaneous recovery when certain domestic and situational difficulties had been settled. One man suffering from recurrent mania relapsed repeatedly so long as certain psychogenic causes in his home existed. He later made a spontaneous recovery. One man with reactive depression failed to improve and later died of pneumonia. In his case external psychogenic factors were operating throughout.

Mode of recovery.—Where the affective reaction seemed to be endogenous, improvement appeared within the first two weeks of treatment; this was especially noticeable in involutional cases in which recovery was smooth and uninterrupted. Where there were external factors of psychogenic importance temporary relapses were common. It seemed to be a necessary part of treatment to settle the psychogenic situation if a lasting cure was to be expected. Two cases of depression accentuated by the fear of air-raids made an apparent recovery only to relapse after a few days at home. Both eventually left hospital after further courses of shock treatment, apparently cured at a time when air-raids were less to be expected. One woman whose husband deserted her failed to maintain her improvement until a settlement had been arranged between him and her family. Other cases could be cited in which disappearance of symptoms after a short course of shock treatment was not enduring so long as provoking factors remained outstanding. This appears to be of some importance in making a prognosis. In all psychoses the outlook is better where there is a strong affective element, for it is on affective disturbances that convulsive therapy seems to exercise the greatest influence. This was demonstrated in all the cases of schizophrenic and mixed psychoses that showed improvement.

SUMMARY AND CONCLUSIONS

Electrically induced convulsion therapy is a safe and convenient method of physical treatment in mental disorders. It is highly satisfactory in affective reactions and especially in involutional melancholia, but it cannot be regarded as a specific, and to be successful should be accompanied by psychotherapy on general lines. Its value in chronic schizophrenic illnesses is towards promoting social improvement rather than cure; on recent

ELECTRICAL CONVULSION THERAPY

CLINICAL OBSERVATIONS

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SINCE the introduction into this country, more than two years ago, of electrically induced convulsion therapy the method has gained fairly wide acceptance, and enough cases have been treated to allow of discussion of its merits or otherwise, and of the types of disorders for which it is especially applicable

A series of 200 cases (63 in males and 137 in females) of both acute and chronic mental illnesses, in whom treatment has been completed for not less than three months, provides the material for this paper All were inpatients of the Bristol Mental Hospital, but conclusions will be based on additional experience gained in treating others, as well as on the cases in the series

METHOD

The instrument used was a standard machine * in which time can be varied by 0 05 sec and voltage up to 150 volts, the voltage variations are represented by a scale graduated from 0 to 100, and the makers supply a graph on which the real values of these calibrations can be read The general principles and technique have been described elsewhere (Kalinowsky 1939, Fleming et al 1939, Shepley and McGregor 1939, Hemphill and Walter 1941, Androp 1941a) and no important modification suggested itself As a routine, the labyrinth was stimulated by syringing the ear with cold water before inducing the fit This seems to facilitate the return of breathing after the fit

In order to establish a standard and convenient practice, after experimenting with various combinations of voltage and time, in more recent patients the initial time has been set for 0 2 sec, and the voltage increased from the 20th calibration by steps of 20% up to the maximum, if necessary, until a fit results If still ineffective the time alone is increased by 0 05 sec, up to 0 6 sec On the whole, settings of the maximum voltage with durations of not more than 0 3 sec have been adequate for most patients Young males almost invariably have a lower threshold, and in treating these the time is set at first at 0 15 sec In many subjects there is a slight increase in the threshold during the first three or four fits (Kalinowsky et al 1941) which usually remains steady thereafter In a small number of cases the threshold increases after each fit, so that eventually it may be impossible consistently to produce a major convulsion with the maximum voltage and what may be considered the maximum duration of current permissible —namely, 0 6 sec This peculiarity was only observed in women, and it appeared to be a bad prognostic sign It occurred in the rare cases of depression which failed to improve and in one case of hysteria as well as in certain of the schizophrenic group

FRACTURES AND PHYSICAL MISHAPS

The danger of fractures of various bones in shock treatment has attracted attention out of all proportion to its importance, and my experience has not justified experiments with curare and similar drugs recently in vogue (Harris et al 1941) In all patients treated, including many not reviewed here, fractures were noted in 3 compression fractures of the bodies of some dorsal vertebræ in one woman who had sustained an injury of the same sort 14 months before admission to hospital, fracture of the surgical neck of the humerus in a man aged 52, and an extracapsular fracture of the neck of the femur in a physically healthy muscular man of 26 Both fractures of the long bones were noticed as the patient recovered from the fit and could only be explained as the result of violent muscular action Neither the positioning nor the convulsion were in any way unusual in either case Fractures of the humerus have been reported (Gonda 1941, Bingel and Meggendorfer 1940), but to my knowledge no fractured femur has been reported before, although bilateral fracture of the femoral necks has occurred in pharmacological convulsions (Androp 1941b)

Physical illness, sepsis or a prophylactic inoculation within 48 hours of treatment are contra-indications In spite of careful investigation of the physical state, the treatment may have been to some extent responsible for subsequent illness in a small number of cases In 2 apparently healthy patients clinical signs of active pulmonary tuberculosis developed before the third week of treatment, and both died within the next six months, one of miliary tuberculosis with tubercles in most organs including the meninges Autopsy showed evidence of old tubercular foci in the lungs of each, with extensive spread of recent origin It is likely that the violent movements and postconvulsive hyperventilation broke down fibrous barriers thereby activating latent tuberculosis In one young man an extensive tubercular adenitis of the neck developed rapidly after the fourth convulsion In 2 cases recovery from each fit was slow, the pulse being feeble and heart sounds almost imperceptible, and was followed by persistent cardiac arrythmia Although these symptoms disappeared in the course of a week further treatment was deemed inadvisable

DURATION OF TREATMENT

Opinion differs as to how often fits should be induced, or what constitutes a course of treatment Three method have been tried 3 fits weekly, 2 fits weekly, and daily fits for two or more weeks In each case treatment was terminated gradually by 3 or 4 fits each at weekly intervals

The first method seems to be satisfactory for serious psychoses and I find it the method of choice for many such cases In milder illnesses, or where considerable improvement takes place after one fit, it has the disadvantage that the patient seems to become excessively dependent on the treatment and that single day intervals are not long enough to allow a good contact to be made with the outer world—as if the treatment was breaking the continuity of normal life rather than of the psychosis In mild cases of the manic-depressive and psychoneurotic types relapses have been seen when the interval between fits was increased to a week, a disadvantage not encountered so often when only 2 fits per week are tried for two weeks, with increase if there is no improvement Every effort is made to occupy the patient and to get him to take his place in the normal world from the very beginning Relatives are encouraged to visit frequently and take the patient for outings or home for week end He is protected as far as is practicable from contact with other patients who freely express psychotic idea If no improvement has resulted by the 9th fit no further fits are induced, recoverable cases have usually shown improvement before the 5th fit

The daily method was tried in 2 cases of mania and 2 of depression as well as in a number of chronic schizophrenics The manics and depressives relapsed, eventually to recover In both depressives a phase of restless confusion developed and endured for several days After its subsidence psychotic symptoms disappeared The picture in both was rather like postepileptic irritability with confusion and aimlessly violent behaviour There has been a complete and lasting amnesia in both for this phase

In the schizophrenics daily fits were induced for upwards of 30 days No beneficial effect was observed at the time, some being more confused and uncooperative, but in subsequent weeks several patients showed more sociable conduct, became clearer and could be employed They have not relapsed In some there was a loss of weight and physical deterioration after the first week This was attributed to inadequate nourishment, these chronic patients came from large refractory wards where they could not possibly receive individual supervision at meal times After induced fits they were sometimes confused and disinclined for the midday meal As breakfast is normally withheld on the morning of treatment, these patients often took little nourishment

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* Made by Edison Swan Electric Co and obtainable from Cox Cavendish Electrical Co

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DR GRAHAM LESCHER REFERENCES

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be equal to 6 cm of water Thus a column of fluid (of approximately the same specific gravity as water) connected to the vein and 6 cm in height would be in equilibrium with the blood in the vein If this column of fluid is lengthened to some 50 cm and ends in a closed drip chamber it is obvious that there is a negative pressure of 44 cm of water in the drip chamber Now if fluid is allowed to enter the drip chamber at a slow rate, it will also enter the vein at the same rate but the negative pressure in the drip chamber will not be materially altered, since the maximum flow through the needle that is possible is much in excess of the amount entering the drip chamber With the advent of a leak in the rubber tubing (and owing to the rubber shortage the risk of this increases daily) air is sucked into the tube Fluid, however, is still flowing down the tube, and its surface tension holds it as a short column filling the lumen Thus a column of air and fluid alternating will pass down the tube and through the needle

A METHOD OF PREVENTION

The screw clamp, instead of being on the rubber tubing between the blood bottle and the drip chamber, should be clamped on the tubing only 2 or 3 cm above the needle in the vein In this position the rate of flow is as easily controlled as before, but in addition it will be found that there is now a positive pressure in the apparatus above the clamp and any leak occurring will allow fluid out and not air in

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LIVER ABSCESS FOLLOWING PERFORATED DUODENAL ULCER

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SOLITARY liver abscess as a sequel to a perforated duodenal ulcer is sufficiently rare to be worth recording The following case presented great difficulty in diagnosis, the clinical picture being that of non-hæmolytic streptococcal septicæmia

A man of 25 was first admitted to the Royal Hospital, Wolverhampton, on July 8, 1941, with a month's history of gastric dyspepsia, culminating in a sudden access of pain in the epigastrium on the day of admission There was board-like abdominal rigidity with great tenderness, and the diagnosis of perforated duodenal ulcer was confirmed at operation, when the perforation was closed under general anæsthesia After the operation he had a daily spike of temperature, ranging between 99° F and 100° F for the first week, which was attributed to a postoperative bronchitis He was discharged to a convalescent home on July 27, and to his own home on Aug 9 He was readmitted on Sept 30 with a story of gnawing abdominal pain round the umbilicus, made worse by deep respiration, he was feverish, and had had shivering attacks for the past two weeks He was very pale and toxic looking with considerable mental hebetude, tongue furred, severe pyorrhœa, heart sounds very distant, slight tenderness in the right side of the abdomen, otherwise physical examination was negative A provisional diagnosis of subphrenic abscess was not confirmed by radiograms of the abdomen, and the patient was too ill to be screened Blood count red cells 3,200,000, Hb 63%, white cells 12,300 (polymorphs 81%, lymphocytes 13%) Urine a fair amount of albumin scanty red cells, cultures grew no non lactose fermenting organisms, films of fæces showed pus and a little blood, cultures again grew no non lactose-fermenting organisms Widal test positive to typhoid H 1 in 500, paratyphoid A 1 in 25, paratyphoid B 1 in 50, negative to typhoid O he had, however, had injections of TAB during the last war Blood culture yielded a profuse growth of non hæmolytic streptococci

He ran an intermittent temperature, which rose to 102° F in the second week when he began to have almost daily rigors A course of sulphapyridine (2 g followed by 1 g 4-hourly for a week) was given, which brought down the temperature, but when the drug was discontinued it immediately rose to 101° F On Oct 17 his condition had greatly deteriorated, pulse had a very poor volume, blood-pressure 70/50 mm Hg, heart sounds very faint, no bruits audible Spleen was palpably enlarged, though soft, three finger-breadths below the costal margin On Oct 22, blood-count 20,000 white cells (polymorphs 84%) Blood-culture again yielded non-hæmolytic streptococci The agglutination to typhoid H had now risen to 1 in 1250 He continued to complain of intermittent acute pains in the right iliac fossa, while the temperature rose to 102° F each evening, he looked jaundiced at times, becoming progressively anæmic (on Oct 29 Hb 38%, red cells 1,880,000) and towards the end drowsy On Oct 31 he was given 2 pints of blood and sulphathiazole was begun In spite of these measures, however, he died on Nov 4

At autopsy, the liver was enlarged, but the external surface showed no abnormality The right lobe contained a large abscess about 3 in in diameter, cultures from this grew gram-positive cocci in chains The spleen was enlarged and septic Granular and contracted kidneys indicated a severe chronic nephritis

I can find only 2 cases of this kind reported in the past 20 years and both were abroad [1] The septicæmic state, wth enlargement of the spleen, subclinical jaundice, leucocytosis, drowsiness, and intermittent pyrexia with rigors are typical of the liver-abscess syndrome whatever the organism

I should like to thank Dr J H Sheldon for permission to publish this case

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Medical Societies

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE

AT the meeting on July 23, a discussion on the

Treatment of Malaria

was opened by Sir RICKARD CHRISTOPHERS FRS Symptomatic treatment intended to relieve the vomiting nausea high temperature and other distressing symptoms associated with malaria, is he said important, but we should not get far if, as physicians had once to do, we had to rely on such treatment alone Nowadays our sheet anchor is the specific drug Up to the last 10 years or so the only specific drug of any distinct potency was quinine Cinchona no longer comes mainly, if at all from the forests of Peru but unfortunately its cultivation especially that of the heavily quinine-bearing forms, has become more and more concentrated in Java, until for a long time that country has held a monopoly With Java now closed to the allies we must look forward to the supply being seriously curtailed, and the production of substitutes must become a most urgent matter Quinine is not the only alkaloid obtainable from cinchona, especially in the more robust and low-grade quinine-yielding species commonly grown in India it may form less than 10% of the total alkaloids Cinchona contains four crystallisable alkaloids—quinine, quinidine, cinchonine and cinchonidine, as well as amorphous alkaloidal material termed quinoidine Cinchonine and quinidine are about equally effective with quinine, while cinchonidine is also somewhat active These other alkaloids occur in amounts collectively considerably greater than does quinine itself, and they have been in use, especially in India, extracted from the bark along with the quinine as cinchona febrifuge, or after the quinine has been removed as quinetum Cinchona febrifuge contains about 7% quinine and 47% of other crystallisable alkaloids A product of this type, totaquina guaranteed to a standard content of not less than 70% crystallisable alkaloids, of which not less than a fifth must be quinine was recommended by the League of Nations on the view that it would make an effective antimalarial remedy available to a greater proportion of the population

Besides these naturally occurring alkaloids there are various derivatives of the quinine type, notably hydroquinine, considered by some authorities to be even more effective than quinine and to be free from some of its undesirable effects However, it is doubtful whether total alkaloids or any quinine derivatives could meet the demand for efficient substitutes, for this purpose we must turn to recently developed synthetic antimalarials About 1924–26 Schulemann, Schonhofer, and Wingler, working in conjunction with Roehl, synthesised 'Plasmochin,' and this brilliant feat in chemotherapy enormously stimulated research In 1932 Mietzsch and cases its effect may be much more favourable No doubt, as others have found, really early treatment brings about a fair percentage of recovery

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[1] Mazzine O F *Arch argent Enferm Apar dig* 1935, 10, 579 Biesenberger, H *Wien klin Wschr* 1927, 39 1424

There were no immediate fatalities in more than 200 cases of mental disorders treated by electrical convulsion therapy, but unrecognised latent tuberculosis may have been reactivated in 3 Three fractures were seen of the humerus, the neck of the femur and of the dorsal vertebræ The only schizophrenics that recovered had been ill for less than a year Spontaneous remissions were observed in 2 schizophrenics after unsuccessful shock treatment, and prefrontal leucotomy was responsible for improvement in 3 other shock treatment failures

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MEASURING CEREBROSPINAL FLUID PRESSURE

P W Nathan
M B LOND, M R C P
CAPTAIN R A M C

C W M Whitty
B M OXFD
CAPTAIN R A M C

(*The Military Hospital for Head Injuries*)

The Dattner lumbar-puncture has been used mainly in venereal diseases clinics It has not been adopted by neurologists and physicians because the measurement of the spinal-fluid pressure is said to take fifteen minutes (Erskine and Johnson 1938)

The needle is based on the trocar and cannula principle, but the cannula is itself a fine (size 18) needle with a stylet within it This fine needle of shaft length 10 5 cm fits within a wider bore needle of shaft length 7 cm A screw on the outer needle can be tightened to hold the inner one in place In use the inner needle is arranged so that its point is level with that of the outer and the screw tightened The whole needle is then introduced as far as the dura The screw is loosened the fine needle pushed into the theca and the screw tightened The hole made in the dura is small This prevents leakage of CSF, the probable cause of lumbar-puncture headaches (Ingvar 1923, Nelson 1930) This would agree with the findings of many VD clinics both here and on the continent that punctures can be done by this method on outpatients with fewer subsequent headaches than when Greenfield's, Pitkin's or Harris's needles are used on patients kept in bed for 24 hours afterwards (Erskine and Johnson 1938) To measure the pressure we have adopted the following procedure

A clip is placed on the rubber tubing connecting the manometer to the needle Sterile saline is introduced by means of a syringe and needle into the manometer bulb The clip is loosened and saline allowed to run out until there is a column of fluid in the manometer equal to the expected CSF pressure, we usually select the 100 mm mark The puncture is then made When the fine needle is within the theca fluid is aspirated just to the end of the needle The manometer is then connected and the clip loosened A continuous fluid system is thus formed from within the dura to the manometer It is necessary to wait 1–2 minutes for the manometer level to become stationary Queckenstedt's test can then be performed Pressure should be applied first to the uppermost side (the side on which the patient is not lying), for when there is no block this gives a smaller rise than the under side Thus a wait for the first reading to return to its resting value is avoided, since we may expect pressure on the second side to give a reading above that on the first The rise is slower than with a wider needle, but with unilateral pressure a rise of 15–30 mm in half a minute has been found to indicate no block Bilateral pressure afterwards can give a further 20–30 mm rise A fall of 10–20 mm will occur within one minute of releasing the pressure

In a series of diagnostic punctures on hospital inpatients we have confirmed the pressure reading, by removing the inner needle, pushing the outer needle through the theca and re-taking the pressure in the usual way The reading has always corresponded within 5 mm

When the fluid is greatly thickened with cells this method is not applicable But we have used it successfully with protein values of 400 mg per 100 c cm, and with fluid which looked like pure blood If the fluid is too thick the outer needle can be introduced into the theca without making another puncture

The technique is no more difficult than with ordinary single needles One rapidly learns the feel of the outer needle piercing the ligaments, and the slight resilient "ping" as the inner needle enters the dura

Besides the advantage of being able to make a full CSF examination on an ambulant patient with less fear of complications, we believe that in cases where pressure is thought or known to be high this is the method of election Pressure can be read with the removal of only 0 5 c cm of fluid, and the risk of subsequent leakage through the dural tear is reduced The chief limitation to the routine use of the Dattner needle—that the pressure cannot be satisfactorily recorded—thus seems to be removed

We are grateful to Lieut Colonel G O Chambers, commanding officer of this hospital, for permission to publish this note

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AIR ENTRY THROUGH TRANSFUSION SETS

M B Devas, B A CAMB
STUDENT AT THE LONDON HOSPITAL

Recently several deaths from air embolism following transfusion have been recorded I would like to point out the ease, under certain conditions, with which large quantities of air can be pumped into a vein through a transfusion apparatus working solely by gravity I performed the following experiments

An ordinary blood transfusion apparatus was set up with a bottle of plasma instead of blood, so that visual observation might be more accurate The apparatus consisted of the inverted plasma bottle, fitted with a rubber cork through which ran an inlet and an outlet tube The outlet tube was connected by rubber tubing to a Laurie type of drip chamber, of which the side arm was attached to a short length of rubber tubing closed with a spring clip From the drip chamber ran another length of rubber tubing to a metal connecting piece fixed to a standard intravenous needle The needle was placed in a trough of water 6 cm deep wit a calibrated measuring cylinder inverted over it to measu the quantity of air that might emerge The flow of plasm was controlled by means of a screw clamp on the rubb tubing above the drip chamber

Expt 1 —The flow through the drip chamber was adjuste to 2 5 drops per sec and was left running for a few minute A fluid level was present in the drip chamber and no air cam through the needle Then the spring clip on the side tul was removed and, contrary to the usual teaching that tl fluid in the chamber would rise and overflow through the sic tube, the level immediately vanished and in a few momen air was coming through the needle at the rate of 23 c cn per min

Expt 2 —The flow through the drip chamber was adjuste to 0 67 drop per sec, with the spring clip closing the sic arm A leak in the rubber tubing was then simulated b plunging a no 12 hypodermic needle into its lumen, 5 cn below the fluid level in the drip chamber Immediately a could be heard entering the tube, and in a few moments we being collected from the intravenous needle at the rate 1 6 c cm per min Throughout the fluid level in the dri chamber remained constant The rate of flow was the increased to 1 3 drops per sec, and air was collected a 5 2 c cm per min A further increase in the rate of flow t 2 8 drops per sec resulted in air being collected at the rat of 10 3 c cm per min No change was noticed in the flui level in the chamber

The venous pressure in the arm of a recumbent patien varies greatly with the exact position of the arm and th general condition of the patient I have assumed it t

Although the infections were usually controlled while the patients were taking these long courses, many relapsed within a few weeks of the end of treatment The general conclusion was that as a suppressive treatment interrupted is preferable to continuous quinine treatment in simple tertian malaria

On these observations the method of treatment which has been successfully followed in Liverpool for many years has been devised It consists in controlling the acute attack by giving gr 30 of quinine sulphate in solution daily by mouth for four consecutive days, the patient is then discharged and told to take gr 20 every Saturday and Sunday for the next eight weeks, and if he relapses after that to continue the week-end treatment for a further period The dosage is very possibly on the liberal side, but before the present shortage that did not matter Now it is necessary to take every step possible to reduce consumption Regarding the imperative necessity of controlling the acute attack, especially in an unacclimatised population, there can be no doubt, but the amount of quinine used for prophylactic or suppressive purposes is probably much greater than that used for acute attacks, and much of that is wasted It might well be argued that better results would be obtained from simply treating acute attacks Suppressive treatment is obviously necessary for troops campaigning in malarious countries and for seamen voyaging to malarious ports, but treatment of the acute attack is essential, and if there is any shortage of antimalarials it is the suppressive form of treatment which must be drastically reduced We must also not waste the drug in the treatment of acute attacks Thus the total dosage in a course suggested by the Army medical authorities is gr 400, if this is designed simply to treat the acute attack probably at least three-quarters of the quinine is wasted, and if it is intended to sterilise the infection it will fail, much quinine could be saved if it were abandoned Professor Yorke expressed surprise at Sir Rickard Christophers's denunciation of the intramuscular use of quinine He agreed that the repeated administration of intramuscular injections in chronic malaria is simply a money-making device, but did not agree that the method is unjustified in serious cases with pernicious manifestations because the necessary rapid absorption could not be expected He has found one or two intramuscular injections of quinine bihydrochloride invaluable in the treatment of really serious cases where the patient must absorb some of the drug quickly Considerable quantities of injected quinine can be found in the muscles of experimental animals weeks after the injection, but sufficient is absorbed to produce the desired results In Liverpool many hundreds of intramuscular injections have been given during the last 25 years, they have produced none of the suggested ill effects and have saved many lives

Finally Professor Yorke referred to the so-called standard Army treatment of malaria, which runs as follows days 1–2, quinine gr 30 daily, days 3–7, mepacrine 0 3 g daily, days 8–9, no treatment, days 10–14 pamaquin 0 03 g daily. This bears no resemblance to Sinton's combined pamaquin-quinine treatment, and he asked whether there is any evidence that pamaquin given in this way does reduce the relapse-rate in either simple tertian or malignant tertian malaria, and if not what it does that the quinine or mepacrine alone would fail to do

MALARIA IN A HYPERENDEMIC ZONE

Dr WILLIAM HUGHES, of the Nigerian Medical Service, explained why the treatment of malaria in a hyperendemic zone presents problems which do not arise elsewhere In endemic malaria the parasite is most often *Plasmodium vivax*, in hyperendemic malaria it is usually *P falciparum* In endemic malaria severe and fatal cases occur at all ages, in hyperendemic malaria nearly all the severe cases and all the mortality occur in childhood In endemic zones the incidence and severity of the disease will be the same in the native population as among newcomers, in the hyperendemic zone while the native population flourishes the newcomers are rapidly killed off unless protected against infection or treated for the disease In the endemic zone infection is comparatively scarce and immunity practically non-existent, in the hyperendemic zone infection is universal and intense during youth but declines towards old age as immunity is established Hence an epidemic may arise in an endemic zone or among non-immunes when for any reason infection becomes more widespread and intense, whereas an epidemic cannot occur in the native population of a hyperendemic zone On the whole, then, the native population in a hyperendemic area are well off compared with those in places where malaria is only endemic Attempts at prevention of infection in a hyperendemic area by antilarval measures may do more harm than good, and even in the treatment of bouts of fever associated with infection we should try to interfere as little as possible with the development of immunity

In such an area quinine should not be given in the vast majority of cases of malaria in adults, because natural recovery will take place without, it will probably interfere with the development of immunity, if quinine becomes scarce it should be reserved for the severe cases seen in children and immigrants, and finally because it confuses the diagnosis, so that, for example, a case of tuberculosis is treated as malaria in the early stages when it is most amenable to the correct treatment According to Barber 48 6% of adults in Southern Nigeria show parasites in their blood, so that the usual diagnostic criteria—parasites and fever—do not hold in the hyperendemic zone The indications for treatment in native children are difficult to define They are in the process of gaining immunity—between the ages of 1 and 4 years the parasite rate is over 90%—and to treat infection per se will check this process There are, of course, cases where urgent treatment is required Fortunately the total amount of quinine needed to cure the fever is very small Most cases require injections of quinine, and gr 5 can be given intramuscularly with safety at any age The potential severity of the disease finds an adequate medium of expression in adult Europeans Immunity could never be allowed to develop in them on account of the virulent course the disease takes in uninfected adults Prevention of infection by antilarval measures is not practicable The habit of taking gr 5 or so of quinine daily has stood the test of time, but has many drawbacks The dose for each individual has to be adjusted, often by trial and error It does not prevent infection and is inadequate once fever occurs It so reduces the parasite content of the blood that it often confuses diagnosis, and is the indirect cause of low fever and so-called tropical neurasthenia Possibly some cases of mental deterioration and alcoholism could be traced to it too

The standard treatment for an attack of malaria in a European in Nigeria was gr 20 a day while the fever lasted, gr 15 daily for the next few days, gr 10 daily for perhaps another week and then back to the routine gr 5 There has recently been a reversion to heroic dosage For the acute fever gr 30 of quinine is given daily by mouth plus gr 10 intravenously, together with 0 4 g of mepacrine The maintenance dose is gr 15 of quinine and 0 1 g of mepacrine daily This heroic regime is unnecessary in most cases There may be something to be said for the large maintenance dose in certain emergencies—for example, a civilian on a long trek or a soldier actually in the battle zone Dr Hughes prefers the usual textbook regime of gr 30 daily for the acute stage and a maintenance dose of about gr 5 Injections of quinine are often required Fatal accidents have occurred with intravenous injections, due to giving quinine too rapidly in a concentrated solution Intramuscular injection is safe and painless if the syringe is boiled immediately before use and the injection is given very slowly—2 minutes is not too long to take Fever should be treated promptly The advice to allow the fever to subside before giving quinine has led to fatalities on board ship If quinine is not given quickly incessant vomiting and coma may develop Headache is a common symptom when there is high fever and some residual headache may remain for anything up to three months in cerebral cases It should be prevented by prompt treatment with quinine and aspirin The patient can be instructed to take up to gr 60 of aspirin a day if necessary Purgatives are not necessary in the acute stage, and they cause abdominal distension by hurrying on the undigested food to ferment in the large bowel

Mauss, working with Kikuth, synthesised 'Atebrin,' probably the most powerful antimalarial at present known A number of compounds of these two types were synthesised by Fourneau and are known as Fourneau compounds Since then many more or less closely related compounds have been made in different countries The main ones are mepacrine (*BP*), 'Quinacrine' and 'Acriquine' which are probably identical with atebrin, pamaquin, 'Praequine,' Fourneau 710, 'Rhodoquine' and 'Plasmocide,' which are identical with plasmochin or 'Plasmoquine' Fourneau 915 or 'Rhodoquine V', and 'Certuna' and Cilional which have an effect similar to that of plasmochin with much less toxicity

For practical purposes we have two well-established forms of compound in general use as synthetic antimalarials—viz (to give them their English official names) mepacrine and pamaquin Pamaquin has the remarkable property of acting on the sexual forms of the parasite Attempts to control malaria in communities through this action have however, not met with much success, though it may have a use in reducing the chances of the spread of infection from cases in hospital It is more and more employed as a sort of adjuvant to quinine or mepacrine especially in after-treatment and so-called prophylaxis but is now rarely used in treating the acute disease because it is rather toxic and not very effective against the asexual stages of the falciparum parasite It is considered by many authorities to have a beneficial effect in reducing the liability to relapses especially when used in after-treatment or prophylaxis along with the more effective schizontocidal drugs quinine or mepacrine For this purpose it is given in very small doses, usually not exceeding 0 02 gramme, and then for short periods or well spaced It is also put up in combination with quinine in tablets It is not thought desirable to administer it at the same time as mepacrine Pamaquin cannot be considered as a satisfactory substitute for quinine in treatment of the acute disease or by itself in after-treatment or prophylaxis, but mepacrine is generally accepted as at least as effective as quinine in the acute disease in reducing liability to relapse and in so-called prophylaxis

Since all our ideas regarding treatment have been largely built up on quinine, Sir Rickard Christophers recapitulated what has been learnt about the use of this drug We are not now so insistent on timing our dosage to catch the sporulation forms, but try to ensure that there will always be a sufficiency of quinine in the blood through the period of treatment Largely as a result of the splendid researches of Stephens and his collaborators at Liverpool during the last war we now know that the heroic doses once given are useless We do not now give more than gr 30 in a day—three doses of gr 10—and many consider gr 20 a day adequate in acute malaria Again we know, largely from the Liverpool experiments, that it is no use trying to eradicate infection by unduly long administration, most authorities now prefer to space administration suitably, usually with an interval or change of treatment About 7 days' treatment is commonly considered suitable to cover the period of the attack For so-called prophylactic use there are the two common methods of gr 5 (or 7) daily or gr 15 on two successive days in the week, gr 7 daily is probably the best dosage, gr 10 daily is not suitable for long periods A good deal has to be allowed for fatigue, sun, cold, &c to which the treated person is exposed In the main these results are applicable to mepacrine With this drug we give not more than 0 3 gramme in the day in three doses of 0 1 g The toxicity is not apparently great There is a liability to some gastro-intestinal effects or abdominal pain, and, especially in native races, nervous or mental symptoms Mepacrine has a definite cumulative effect so that the total daily dosage is pretty well fixed, and the periods for which it is administered must be carefully watched Usually in the acute attack it is given for not more than 7 days, and if necessary repeated again after an interval In prophylaxis the dosage must be cautious—say 0 2 g on two successive days in the week or even at longer intervals Mepacrine is a powerful yellow dye and liable to give rise to yellow coloration of the skin, but this is in no way harmful, it is said that the sclerotics are not affected It is supposed that mepacrine does not, like quinine, precipitate blackwater, but cases following mepacrine have been described It is also said to be less liable to bring ab abortion than quinine, but this is uncertain Ther one feature in which mepacrine has a clear advant over quinine—in its suitability for intramusc injection

Treatment in the ordinary case of malaria is l carried out by oral administration, but if there cerebral or other pernicious manifestations parent administration is not only a matter of necessity bu urgency With quinine this must be by careful in venous injection, either using a dilute solution or injec the drug very slowly Intramuscular use of qui in such circumstances is unjustified as the necessary r absorption could not be expected Intramusc injection of quinine is not so much used in pernic malaria as in chronic cases thought to be resistant use of intramuscular quinine for such a purpose is lar the perquisite of the doctor babu or low-class practitio In the opinion of many it amounts to malprac Probably the case is not malaria to start with results at best form a necrotic mass in the tissues an the worst lead to tetanus or serious sloughing In muscular injection of mepacrine, on the other hand accepted as a correct procedure, and it does not ca sloughing Mepacrine methanosulphonate *BP* ('Ate Musonate,' 'Quinacrine Soluble'), a more soluble sal the alkaloid, is put up in ampoules for injection mepacrine then we have a good substitute, and at pre the only one, for quinine That this is the last wor synthetic antimalarials is improbable Thus cer arsenical compounds have been shown by Yorke to h a remarkable sterilising effect on certain forms of mala Sulphonamides have not so far given much indicatio their usefulness Glyn-Hughes, Laurie and Yorke h in testing out compounds of the synthalin type fo that at least one of these, undecane-1 11-diamidine effective against malaria—an entirely new type antimalarial compound

LESSONS FROM THE LIVERPOOL SCHOOL

Prof **Warrington Yorke** said that two facts se of overriding importance—that we have lost Java with it over 90% of the world's supply of quinine, that our troops are already operating in many malari countries and many of our ships are calling at malari ports It seems obvious, therefore, that the demand antimalarial drugs will increase enormously T serious situation demands immediate action in manufacture of an adequate quantity of the only effic synthetic substitute for quinine, namely, mepacr and in the conservation of existing stocks of quin The only way in which we can materially cons quinine is by using it as economically and efficientl possible in the treatment of malaria It is a remark fact that there is no unanimity of opinion on how it best be used The extremely low toxicity of quinine encouraged the use of unnecessarily large doses In researches at the Liverpool school in the last war, attempt was made to decide on the smallest amoun quinine necessary to control the acute attack Pati suffering from acute simple tertian malaria were trea with quinine in doses ranging from gr 5 to gr 12 each of two consecutive days only Even in the gr treated with gr 5 parasites disappeared from the p pheral blood and the temperature became norma over 80% of cases, and this always happened when doses were gr 10 or more Within a few weeks, howe most cases in all the groups had relapsed—even th given gr 90–120, which is beyond the limit of tolera for most people These results suggested that in treatment of acute simple tertian malaria nothing to be gained by giving more than gr 20 or gr 30 couple of days, and that it was impossible to produ sterilisans magna by pushing the dosage to a de which was definitely toxic A series of cases of a malignant tertian malaria were given a similar two treatment of gr 30 of quinine and here again the t perature became normal and trophozoites disappe from the blood in all of them With the object of fin whether a definite cure can be obtained by a long co of large doses of quinine, cases of simple tertian mal were given daily doses of up to gr 45 by mouth for as l as eight weeks, and others were given the same do on two consecutive days only for the same per

THE LANCET

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DIPHTHERIA IN THE IMMUNISED

In analysing the incidence of diphtheria among the inoculated in Liverpool since 1925, Glover and Wright[1] have drawn attention to an odd gap in reported results of immunisation Many figures for the response to the Schick test or the antitoxin content of the blood after immunisation have been published, but there have been few records of what really matters—the subsequent history of such children as regards diphtheria infection In Liverpool no Schick tests or antitoxin estimations were done, this was a plain clinical tale, though it points more than one moral From October, 1925, to the end of 1938, 54,985 persons had been inoculated with five varieties of prophylactic, one of them (MT) now long obsolete Among this total 396 had, up to the end of 1939, contracted diphtheria and 11 of them had died, all the fatal cases were in children under school-leaving age and 6 of them had been inoculated with the admittedly unsatisfactory MT In every case, fatal or not, the virulence of the infecting strain was established, with few exceptions these were gravis or intermedius strains, all the fatal cases being caused by one or other There is clear evidence too of the greater preponderance of these more virulent strains among inoculated patients than in diphtheria cases in the city as a whole Yet cases in the inoculated were mostly very mild Even so, Glover and Wright consider that they were too numerous In part their number is ascribed to the weak prophylactic (MT) used in the early days No Schick tests were done after immunisation, so it is not possible to say whether the infected child was a Schick immune, some children of course are refractory to immunisation

So much for the debit side of the account, to the credit of immunisation there is the outstanding fact that whereas between 1933 and 1939 the case-rate among uninoculated children under the age of 10 years averaged 11 3 per 1000 per annum, among inoculated children it ranged from 1 5 to 3 0 The observation that in Liverpool the diphtheria rate over the age of 10 is much the same in the uninoculated and inoculated deserves further epidemiological study Much remains to be done Liverpool is heavily infected with highly virulent strains of the diphtheria bacillus and is inhabited by a population coldly indifferent to the offer of free immunisation Up to the end of 1939 only 6% of the preschool children and only 31% of those between 5 and 9 years had been inoculated Since at least 30% of preschool children must be immunised to affect incidence it can be no surprise that there has been no decline Liverpool has always been in the forefront of advances in public health and it is unlikely that this state of affairs will continue indefinitely provided personal approach to parents can be contrived and local practitioners cooperate fully

Meanwhile, figures such as those of Glover and Wright far from lessening confidence in immunisation should enhance it The prophylactic used, in Liverpool as elsewhere, is all-important, and it is satisfactory to know the care that is now taken by the Ministry of Health, as the licensing authority, to ensure that APT issued to local authorities for the use of practitioners is of high antigenic potency[2] It is important, too, as Bousfield[3] points out, that statistics published from various sources should be comparable If this is to be achieved, technique and the collection and presentation of data must be uniform, Bousfield sets out more than twenty possible sources of error which may account for the widely divergent results of immunisation campaigns

SYME'S AMPUTATION

Almost exactly 100 years ago[4] a boy of 16 was admitted under James Syme in Edinburgh for multiple sinuses of the foot involving the tarsal bones Amputation was essential but since both calcaneus and astragalus were involved Chopart's amputation, devised 50 years previously, was impossible and an amputation below the knee was the only alternative Syme[5] decided to amputate through the ankle-joint and thereupon fashioned a flap from the heel, dissected out the calcaneus, and with some straight bone-cutting pliers which had lately been designed by Liston removed both malleoli to leave an end-bearing tibial stump Although some sepsis followed and there was partial sloughing of both upper and lower flaps he records a satisfactory result A few months later a "medical gentleman" aged 25 was sent to him suffering from caries of the ankle-joint, where Syme[6] added to his operation by sawing off a slice of the tibial mortice The adherent skin due to disease may have been partly responsible, yet the novice will be comforted to know that Syme buttonholed his flap in dissecting out the calcaneus However, he records that this opening gave efficient drainage

For over three-quarters of a century Syme's was regarded as the most satisfactory of all lower-limb amputations, though there were some modifications The classical skin flap was found to be too bulky and an elliptical type of skin incision came to be employed, taking just over a finger's breadth of the heel sole, and the tibia was sawn through half an inch proximal to the articular surface Elmslie in this country is usually said to have devised this, the French[7] call it Guyon's method, but he also retained a slice of calcaneus in the heel flap After the last war the Ministry of Pensions surgeons at Roehampton had special opportunities for observing the results of different amputations, and they came to the conclusion that end-bearing stumps were unsatisfactory Three-quarters of 12,000 cases where the stump was end-bearing had to have re-amputations, 38 out of 54 Syme cases had to be re-amputated In 1927 the end-bearing stump operation became obsolete in the ministry's hospitals and they decided that even the Syme had to go It was their experience that the Syme stump soon developed callosities and that the operation was difficult to do well, so that when the flap settled it was often displaced backwards or to one side Any attempt at refashioning the flaps invariably failed But their greatest objection to the

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[1] *Lancet*, Aug 1, p 133

[2] *Brit med J* June 13 1942, p 734

[3] Bousfield, G *Publ Hlth*, June, 1942, p 165

[4] Sept 8 1842

[5] *Lond Edinb mon J med Sci* 1843, iii, 93

[6] *Ibid* p 274

[7] Broca, B A. and Ducroquet, C The Artificial Limb, London Translated and edited by R C Elmslie 1918, p 78

When a European leaves the hyperendemic zone the general rule has been to recommend gr 5 of quinine daily for 2 months, but there have been many failures and some cases of blackwater fever with this regime Dr Hughes now recommends a course of mepacrine and quinine beginning ten days after leaving the coast The course consists of 0 2 g of mepacrine and two gr 5 tablets of quinine daily for seven days The results in fifteen cases have been successful Whether strangers who visit the coast should take quinine depends on the length of stay, the localities they visit and the season of the year If the probabilities are in favour of infection Dr Hughes advises prophylactic quinine and after-treatment In the treatment of blackwater fever alkali therapy is a sine qua non whether blood is transfused or not The urine should be rendered alkaline within twenty-four hours Low fever requires careful diagnosis There are genuine cases which run a temperature of 99°–100° F for weeks at a time The most frequent causes are malaria and pyelitis If quinine is discontinued for 4 or 5 days repeated examination of the blood will usually settle the diagnosis A bout of fever with rigors in such cases is not a bad thing The minimum period of convalescence after an attack of malaria should be a week from the last rise in temperature As regards troops in a hyperendemic zone, Wenyon in his survey of malaria in Macedonia during the last war emphasised the impossibility of preventing malaria by antilarval measures in the fighting zone, and the last war was mainly static while this one is mobile Antilarval measures are therefore out of the question now It might be urged that under camp conditions troops could be protected from infection, but actually such protection is almost impossible to achieve In the remote event of it being successful it might promote a feeling of false security

SOME CLINICAL EXPERIENCE

Sir Philip Manson-Bahr said he had never departed in the main from the opinions he based on his initial investigations into the synthetic antimalarial drugs He had been the first in this country to investigate the potentialities of plasmoquine and plasmoquine compound in 1926 and 1927, and later had done similar work on atebrin There could be no doubt that by their aid the therapeutics of malaria had been greatly improved At present the rôle of pamaquin was as an adjunct to quinine in the treatment of benign tertian malaria, and especially in the prevention of relapses which constituted such a feature of this infection in the prolonged quinine anti-relapse treatment of former days It was now fairly certain that relapses could be prevented by courses of moderate quinine and pamaquin dosage Mepacrine, on the other hand, was of little service in suppressing this infection, but was specific for the subtertian form, especially in combination with quinine in small doses (gr 10 daily) He had advocated this method in the past ten years and had seen no reason to regret it, but he was not impressed with the benefits of parenteral injections of mepacrine (atebrin musonate) Occasionally intramuscular abscesses formed and might be large As regards intravenous injection he had reason to believe that in cerebral malaria its action was too slow to be effective and he had seen cases so treated which showed no signs of improvement till intravenous quinine (gr 10 of the dihydrochloride) had been substituted In a recent case there appeared to be no reduction in the number of circulating parasites, or alteration of their morphology, after two intravenous injections of atebrin musonate He had been impressed with the prophylactic value of mepacrine in preventing the development of subtertian malaria, and he had for years advised a five-day course of mepacrine to be taken by officials and others during the homeward voyage from West Africa He had always regarded intramuscular quinine as a most valuable therapeutic measure in severe subtertian malaria He had never had serious mishap and he was convinced that the evil reputation this method had sometimes acquired was due to the practice of giving repeated injections into the same area, whereas two or at the most three injections were ample under any circumstances

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Reviews of Books

Stitt's Tropical Diseases

(6th ed) Richard P Strong, M D Sc D London H K Lewis 2 vols Pp 1747 £5 5s

It is now thirteen years since the fifth edition of this book appeared, the sixth edition has been rewritten and has swelled to two volumes Dr Strong's aims have been to summarise our knowledge of the clinical manifestations and treatment of tropical diseases and of important zoological aspects and laboratory measures relating to diagnosis, prevention and transmission As a result the book now takes its place as an authoritative work on tropical diseases The arrangement is on an ætiological basis, he deals in turn with the protozoal, the bacterial and the virus diseases, the disorders of nutrition, diseases which cannot be satisfactorily classified, and the fungous and helminthic diseases He admits that he has only considered briefly the more important cosmopolitan diseases encountered in warm countries, and in any case a book on tropical diseases in the strict sense would consist of two chapters—one on tokelau and the other on pinta However, to give 12 pages to trench fever (which is neither an important cosmopolitan disease nor particularly incident to the tropics) and only one page to smallpox, admitted to be "the greatest scourge of the natives of tropical countries," is disproportionate, and to devote two pages to a detailed account of the magnesium sulphate treatment of tetanus while dismissing the use of bromethal in half a line is to emphasise a method which should now be allowed to die a natural death

The first two sections dealing with the protozoal and bacterial infections are the best in the book, and the chapters on malaria and blackwater fever are full and could hardly be bettered Ascension and St Helena should be added to the list of tropical islands which are free from malaria, and the use of people who have lived in malarial countries as blood donors should be called impermissible, not merely dangerous Sternal puncture—a method of investigation which should entirely replace splenic and hepatic puncture—is rightly advocated in malaria and in the leishmaniases More might have been said of the work of the last ten years on sylvatic or jungle yellow fever, and on the recent work on typhus in Malaya The chapter on sprue is somewhat inadequate but the other recognised disorders of nutrition are well described The criteria used nowadays in making a diagnosis of beriberi are not discussed—unfortunately, since the estimation of blood pyruvic acid is unquestionably of value Particular attention has been paid to the zoological aspects of the helminthic diseases Pinta, now known to be caused by a treponema, is classified today among the bacterial instead of the fungous diseases The probable connexion between clonorchiasis and primary carcinoma of the liver, and the use of the gold salts in the treatment of clonorchiasis both deserve some mention The excellent appendix on tropical hygiene gives advice on everything from mosquito-boots to the "disinsectisation" of aircraft The objectivity and freedom from bias are very pleasing throughout for example, the remark "it is well to remember that not all degenerative diseases of the nervous system are due to deficiency of vitamin B_1"

Aids to Osteology

(4th ed) Nils L Eckhoff, M S Lond, F R C S London Bailliere, Tindall and Cox Pp 260 6s

This book made its first appearance some twenty years ago The last edition, like many other books, suffered from enemy action, but the opportunity thus made was used to review the text and introduce more figures As a result Mr Eckhoff has written a fourth edition of high level—clear, accurate in detail, and illustrated with figures likely to be of service to the reader who has not the bones themselves under his eyes Unfortunately the illustrations are only in the sections dealing with the trunk and limbs, simple line drawings would make the Chinese puzzle of the skull bones much more comprehensible holding 1 part of hæmoglobin per million parts of water We are said, nowadays, to require 60 mg of ascorbic acid every day for optimum health This is 10–20 times less than our calcium requirement and is only 20 parts per million of our total intake of food and water Looked at in another way, however, this is really quite a large amount and it could be weighed with accuracy on any good chemical balance We require only a fifth of this weight of iron or zinc and much less copper per day An adult s requirement of vitamin D is said to be 100 to 200 international units per day This sounds a lot, but 1 gramme of calciferol contains 40,000 000 IU of vitamin D, so that by weight our daily requirement is only $\frac{1}{200}$ to $\frac{1}{400}$ of a milligramme Our iodine requirement is greater but is also of this order of magnitude These are very small amounts Our D requirement is only about 1/300,000th of our calcium requirement—quite a bit smaller, as anyone will realise who has looked round the crowd at Twickenham during the interval of the Calcutta Cup match, but large enough to exert a profound influence upon it. Yet if our daily dose of D were made up into pills the size and weight of a red blood corpuscle we should have to take 30,000 pills a day 20 pills a minute all round the 24 hours

These calculations may seem mere frivolities, and admittedly they are only a variation on the old adage about big fleas having lesser fleas, but it may comfort some to realise that these lesser fleas have concrete sizable proportions and we need not proceed ad infinitum to visualise them

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Annotations

PLASMA FILTRATION

AN essential step in the preparation of citrated plasma suitable for storage as a blood substitute is its clarification and sterilisation by filtration through asbestos pads Unfortunately this presents considerable practical difficulties, since passage through the filter induces clotting Bushby and Whitby[1] suggested by way of explanation that, in the presence of magnesium ions from the asbestos, thrombin is formed from prothrombin adsorbed on the pads, and this leads to clotting They believe that washing the pads with dilute alkali at intervals during filtration removes adsorbed prothrombin before its conversion to thrombin, since clotting of the filtrate is reduced It is not however abolished, and larger or smaller clots usually develop during storage in bottles of citrated plasma filtered in this way In some cases it is then difficult to decide whether a given bottle is contaminated or sterile, and it is always necessary to include a filter in the equipment used for transfusion Bushby and Whitby[2] have now shown that if citrated plasma is made decidedly alkaline before filtration the filtrate does not clot, and they conclude that thrombin is not formed under these conditions The excess alkalinity of the filtrate can be neutralised with carbon dioxide under pressure, so that the final product has the almost neutral reaction of the blood Clinical tests of citrated plasma filtered by this method have proved satisfactory, and there is no chemical evidence of damage to the plasma proteins by the somewhat drastic incidental alkalinisation The new method is more rapid and less wasteful than the earlier method, but cannot of course compare in simplicity with the filtration of serum It is the possibility of preventing the entire waste of time expired citrated blood by recovering plasma for storage which justifies persistence in plasma filtration Since, however, most of the bottles of citrated blood now collected contribute ultimately to blood-substitute stores, it might seem wiser to collect clotted blood and store serum, maintaining the banks of citrated blood at that level which the experience of the Transfusion Services has shown to be necessary Not only would the difficulties of plasma filtration thus be avoided but the stored product would be cleaner, since it is said[3] that at least 5% of bottles of blood collected are contaminated and hence should be processed without delay

FAMINE RELIEF

THE food blockade of the continent is a blunderbuss which by definition does execution at short range without exact aim Designed to starve our enemies into submission it helps to starve our friends in enemy-occupied countries The Famine Relief Committee, formed as a result of two conferences of church leaders called by Dr G K A Bell Bishop of Chichester, in the spring, has collected evidence on food conditions in Europe[4] Famine is acute in Greece, where 320,000 deaths—five times the normal death-rate—were registered from August, 1941, till the end of March, 1942 Before the war 40% of necessary foodstuffs were imported into Greece, in December the average daily consumption of bread had been reduced from the normal 27 oz to 2½ oz or less In January 900 deaths a day from famine were reported, children are naturally most affected, and were unable to resist epidemic diphtheria which swept Athens and the Piræus In Belgium cases of starvation œdema are appearing, and scurvy, rickets, anæmia, dermatosis and eye infections are becoming common Of children attending school two-thirds get hardly any breakfast, and a third get an inadequate midday dinner The teachers cannot hope to maintain scholastic standards because the children are too apathetic to attend In unoccupied France conditions are comparable with those in Europe in 1918, the infant mortality-rate increased 45% between 1939 and 1940 In occupied France the official rations exist only on paper, and only in the rural districts is it possible to maintain a reasonable standard of living Rations allowed to the Poles are on a starvation level and the Jews in Poland get less still. The committee, which is under the chairmanship of Dr Bell and has Miss Pye as its honorary secretary, includes representatives of every section of Christian and Jewish thought in Great Britain They plan, in coöperation with existing organisations to send food, vitamins and medical aid into occupied countries wherever control is possible This is not a fantastic undertaking, for in January, 1941, Germany guaranteed that no deduction for the benefit of armies of occupation would be made from shipments destined for necessitous people in occupied territories, and this guarantee seems to have been fully observed Thanks to negotiations carried through by the British Government 4000 tons of food a month is reaching Greece through Turkey The American Friends Service Committee is giving supplementary school meals to 85,000 children in unoccupied France and is also supplementing feeding in refuge camps The Commission for Polish Relief has been able to carry out controlled relief, 50,000 children being fed for 18 months, the Polish foreign office is satisfied that none of this food was taken by the Germans The new Famine Relief Committee is anxious to see an informed public opinion in this country which will be ready to face the difficulties of controlled relief Several important bodies including the Church of Scotland General Assembly, the Baptist Union of Great Britain and Ireland, and the Cambridge United Council of Christian Witness, have already

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[1] Bushby S R M and Whitby, L E H *J R Army med Cps* 1941 76, 4

[2] *Ibid*, 1942, 78, 255

[3] Macfarlane R G Macsween J C Mainwaring, B P S and Parish, H J *Brit med J* 1942, i 377

[4] Food Conditions in Europe Compiled by Miss E M Pye. Pp 12 Obtainable from the Secretary of the Committee, Drayton House, Gordon Street, London, W C 1 3*d*

Syme stump was that no artificial limb could be fitted to conceal the disablement—and they contend that the man who has had his leg off must be made to walk, act and look as if his limb was absolutely normal[8] Few could argue with the ministry, for not many surgeons did enough amputations, and this teaching came to be accepted Of late the Canadians, led by **Gallie**[9] and **Le Mesurier**,[10] have asserted that the surgeons of the ministry have been too hard on end-bearing stumps, in particular Syme amputations In Canada the government also had a follow-up after the last war and over 2000 amputations have since been under constant supervision Out of 53 Syme amputations, including 1 double, 7 needed subsequent minor operations such as removal of a neuroma, but not a single one has had to be re-amputated since 1922 Of these cases 20 have had their amputations for over twenty years, but their stumps show no œdema or circulatory disturbances and they can "stand and walk all day, follow the plough and work in the factory" The Canadian artificial limb for a Syme amputation differs slightly from ours in that the stump end is completely enclosed, the stump sits in a metal cup and a blocked leather bucket extending up from it is so shaped that the upper part takes some tibial bearing

The low opinion of Syme's amputation does seem to need revising At present, as **Le Mesurier** points out, anyone doing a Syme amputation is liable to find it re-amputated by someone else It would be a pity if the operation was no longer taught in medical schools There can be no doubt that for the agricultural labourer, and wherever expert mechanical-limb centres are not available—a large part of the globe—the Syme amputation is the method of choice, to do a day's work a man need merely shove his stump into an easily made broad boot A peripatetic correspondent[11] with the Chinese forces mentions this difficulty of obtaining artificial limbs and says that out there every effort is therefore made to avoid amputations A Syme amputation is not something to be rushed in the heat of battle, for sepsis spells certain failure for the stump Indeed in war, unless circumstances are particularly propitious, immediate amputations through any site of election are undesirable Amputation by flaps at the site of injury is the wiser choice, and the final amputation is a plastic procedure to be settled later **Huggins**,[12] after extensive experience of amputations in the last war, laid down that the optimal time for re-amputation is when all œdema in the skin and deeper structures has subsided—usually after about four months **Le Mesurier** maintains that a Syme must not be done above an inflamed wound, since the lymphatics are infected and sepsis is inevitable, nor for an arterio-sclerotic lesion or one following cold or immersion Attention to the details of the operation is particularly important To prevent the flap slipping to either side or backwards careful strapping is required, it is probably the only amputation where nerve shortening is desirable Despite drainage a hæmatoma will sometimes form, and immediate postoperative pain in the stump is often a sign of it **Perkins**, in a lecture at the British Postgraduate School, advised that in all amputations if a hæmatoma is diagnosed you should "pocket your pride, take the patient to the theatre and evacuate the clot" A failed Syme is not a disaster, nor is it a reflection on the surgeon, who in modern war has to handle severely mutilated tissue But a failed below-knee amputation is a tragedy for the patient, and a primary tibial amputation at the site of election, performed for a foot injury, carries a heavy responsibility Even under the best conditions the below-knee amputation does not invariably stand up to full wear, and an increasing number—10% at present—have to be fitted with ischial bearing corsets The outstanding disadvantage of the Syme amputation is the ungainly artificial limb But for a man handsome is as handsome does and most of the limb is concealed by his trousers For the woman ungainliness is undoubtedly a strong argument for a tibial election-site amputation, though it is surely not beyond the ingenuity of the makers to fashion a more shapely limb for the modern type of Syme amputation

HOW BIG OUR SMALL NEEDS

Appreciation of size and weight is a question of comparison and familiarity Housewives think in terms of pounds and ounces and have a good idea of the value of each in terms of foodstuffs We all know how many pennies it takes to make a trouser pocket uncomfortably full and heavy, and how many gallons are required to top up the tanks of our cars—but change the units and we are lost Many who took a car to the continent in the old days will recall their confusion when they first had to buy petrol in litres There may be still worse difficulties if the mind is called on to appraise a greater range of size or weight or distance than is usual in everyday life—the National Debt would be a poser to most people who visualise it in terms of their own salary, and the difficulty of grasping astronomical magnitudes has become a popular gambit Few of us have even tried to size up our vitamin and mineral requirements in terms of our daily food Here things are further complicated by the multiplicity of units and methods of expression, there are parts per million, gammas per gramme, mg per 100 g and so on Workers in these subjects, moreover, make a point of emphasising the minute quantities of the substances which they can handle and which may be necessary for life, so that many doctors have resigned themselves to feeling that appreciation of the size and weight of "traces" is beyond them They have lost, in consequence, a great deal of the interest attached to the recent work on nutrition

Most people find it a help to get the data with which they are confronted into concrete terms or at any rate familiar units Sometimes it helps to think of things in terms of oneself A man is about 1 part per 100,000 of a big football crowd, or 1 part per million of the weight of the *Queen Mary* Others find that 1 part per million, or 1 gamma per gramme, can be made understandable by calling them 0 1 mg per 100 c cm Others again employ some standard of comparison such as a red blood corpuscle with which they are familiar A glass of water, for example, containing 6,000,000 red blood corpuscles may be regarded as particles appeared more dense than usual no internal structure being visible. This suggests that some of the antibody remained attached to the virus particles. A somewhat similar finding in the case of bacteria indicates that soon more light may be thrown on the reaction between viruses and their antisera. It was not possible to designate the limiting structure which separates the virus from the surrounding medium as a semipermeable membrane. Green and his co-workers only say that the surface of the bodies appeared to be different from the main internal constituents. Ruska does not think that the viruses of variola rabbit myxoma and ectromelia possess a membrane similar to that of the bacteria. However it seems certain that vaccinia virus has a morphological structure which in many respects approaches that of bacteria and differs from that of the plant viruses. This technique may later reveal such interesting facts as a difference in structure between freshly isolated strains and those long passaged in mammals or attenuated by passage in the developing chick embryo.

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[8] Langdale Kelham, R D At the British Orthopædic Association meeting in Liverpool, 1942

[9] Gallie, W E *Ann Surg* 1941, 113, 925, *Surg Gynec Obstet* 1942, 74, 370

[10] Le Mesurier, A B At the British Orthopædic Association meeting

[11] *Lancet*, 1942, i, 664

[12] Huggins, G M Amputation Stumps, London, 1918, p 11

GASTRIC ACTIVITY AND FAT DIGESTION

THE action of fats on gastric digestion is peculiar but is slowly being clarified. It is now established that ingestion of fat will inhibit both motor and secretory activity of the stomach—the latter including both enzymes and acid, and affecting both chemical mechanical and psychic ' secretion. Ivy and others have shown that this inhibition is at least partly dependent on an inhibitory hormone known as enterogastrone which released from the duodenal mucosa when fats or fatty acids reach that area is absorbed into the circulation and thence depresses gastric activity. Quite why such an inhibitory mechanism exists is not yet apparent, but some recent experimental work of Tidwell and Cameron[1] suggests that it varies with the chemical composition of the fat ingested. Working with cats and rats these investigators found that the more unsaturated fats tended to remain longest in the stomach, while the more saturated ones tended to cause least gastric inhibition and to get further down the intestinal tract in a given time. For instance, while 43% of a dose of olive oil could be recovered from the cat s stomach at the end of three hours only 25% of tripalmitin, but as much as 71% of linseed oil could be found there after the same period. Similarly, whereas after three hours much of the palmitin was found in the cæcum none of the linseed oil had by that time reached so far. In observations on one infant given a barium meal containing various types of fat they again found that the gastric emptying time when olive oil was used was more than twice as long (5½ hr) as when a palmitin and stearin mixture was given (2 hr). From these results Tidwell and Cameron suggest that gastric inhibition is probably induced by the actual absorption of some fat from the upper intestine rather than by any purely physical properties of the fat itself. Thus they conclude from their findings that fat structure, fat absorption and gastric inhibition run—remarkably parallel—with saturated fats the intestinal absorption is more rapid as the carbon chain is shortened and the more readily fats can be split the greater their absorption rate. The mechanism would thus depend in their view on the intestinal enterogastrone being liberated into the blood stream only on actual absorption of some fat from the duodenum and not merely on the entry into the duodenum of fat as such, thus the more rapidly some absorption can occur the more quickly and completely will gastric inhibition take place. The exact part which this mechanism plays in the processes of digestion and its precise applications in clinical medicine are far from clear. Whether the inhibition is merely a safeguard against fats (and other foods) entering the intestine more rapidly than they can be absorbed or whether it is bound up with the acid-alkaline reactions of stomach and duodenum is not known. Certainly gastric emptying time and secretion are delicately balanced and highly adjustable processes and their relation to the varying types and quantities of foods eaten is one of the factors on which the whole mechanism of digestion—and indigestion—depends. More work on these lines should help in the treatment and prevention of both major and minor dyspepsias.

INFANTILE RICKETS IN AUSTRALIA

DISQUIETING evidence of the occurrence of rickets in 47% of a group of full-term infants at some period in the first year of life is reported[1] by F W Clements from the Australian Institute of Anatomy Canberra. It is disquietening that the prevalence of rickets should be so extensive in a land richly provided with sunshine and all the more so when it is appreciated that the source of the material for study was the infant welfare centres of the Canberra Mothercraft Society where the very poor are not found "and the percentage of under-privileged is small". During the past 2½ years nearly 500 infants have been seen and examined radiographically for rickets. Of these 150 have had radiograms taken regularly each month during the first year of life and of 134 full term infants who had completed this examination 63 or 47% showed definite evidence of mild rickets during the first year of life. Eight premature infants in the series all showed rickets. A child was considered to have suffered from rickets if one radiogram was obtained showing definite rachitic changes. ' Doubtful appearances that became normal in the next radiogram were not included as positive. In 80% the onset of rickets occurred before the sixteenth week. Connecting the radiographic findings with certain clinical aspects of the subject Clements reaches certain tentative conclusions. For example as regards bony deformities it is recorded that 3 to 4 months after the rickets had healed the bones appeared to be normal, but it is proposed to follow these infants for some years for the possible development of knock-knee bowleg and certain changes in the shape of the chest wall. A similar follow-up study will be made as regards the state of teeth. When the rickets persisted for more than three months some of the classical clinical signs appeared particularly epiphyseal enlargement and hyperplasia of the costochondral junctions. Growth was not essentially affected unless the rickets lasted for four or five months. The infants appeared heavier than they actually were and looked pale, although hæmoglobin determinations showed no anæmia. Cranio tabes was not found in this series. Indeed Clements insists that the mild rickets he detected radiologically does not give rise to sufficient clinical signs to make diagnosis possible except by X rays until it has persisted for more than three months. An analysis of the factors responsible for this high prevalence of mild rickets suggests that the calcium intake of the mother coupled with adequate absorption of the calcium is the most important. Postnatal feeding of the infant (and even of the mother in breast-fed infants) is also important, and it is not enough that the infant shall obtain enough calcium. ' It is imperative that there shall be enough vitamin D in the body of the infant to ensure the highly efficient absorption of the calcium from the alimentary tract." Clements doubts if enough vitamin D can be developed by regular exposure to the sun and to prevent rickets this substance must be taken by mouth. Clements makes certain important recommendations as a result of his studies. Every expectant mother must have adequate calcium in her diet—secured by at least 1 *pint of milk* daily or large doses of calcium lactate or gluconate (120 grams of calcium lactate are equivalent in calcium to advocated such relief The committee suggests that regular and adequate supplies for Greece must have first place, In order that our Government may have evidence of public feeling the committee advises those interested to form local groups of sympathisers, to get people whose names will carry weight to write letters to the local press, and to arrange deputations to members of Parliament Mr Dingle Foot's recent statement[5] in the House of Commons sets out the directions in which it has already been possible to mitigate the effects of blockade At present no stocks of food may be collected in Britain for relief, but the committee has decided to open a fund to be used for help in the invaded countries as soon as permission is granted , if permission is withheld until the end of the war, it will be used then for immediate help and reconstruction

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[1] Tidwell H C and Cameron E S *Bull Johns Hopk Hosp* 1942 70 362

[1] *Med J Australia* 1942 i 336

Two instructive booklets written for the Royal Institute of International Affairs, one on postwar relief in general[6] and the other on medical relief,[7] urge the need for setting up international relief machinery now so that it can be put in motion directly the war ends When the last war ended there was a year of chaos in which vast numbers of people died from malnutrition and preventable disease on the continent before effective relief measures could be applied The machinery might be controlled by either the Office d'Hygiène Publique at Vichy or the Health Organisation of the League of Nation at Geneva The former, unluckily, is now largely German controlled and has no personnel for relief work The Health Organisation has already done extensive relief work in many of the distressed countries and its experience and the nucleus of its medical staff which still remains could perhaps be used at once when the war ends It may however be better to set up an entirely new organisation with a commissioner and an advisory committee including representatives of the public health services of each country. Fortunately it is not difficult to foresee what forms of medical relief will be required and a start should be made now to work out the details, as well as to build up a store of food and medical supplies The first step is to decide on a central administrative body which will ensure that this time the efforts of voluntary and official organisations are not squandered through lack of coordination Dr Mackenzie also demonstrated that it is not too soon to plan the outlines of a permanent international medical organisation, though the problems it will have to face can as yet be only dimly discerned

ANISEIKONIA

PEOPLE who have a different refractive error in their two eyes see ocular images of unequal size For instance, if one eye is myopic and the other hypermetropic, the image in the latter will be the larger of the two, for a convex lens magnifies and a concave lens minifies Provided that the disparity is not too great, these people achieve stereoscopic vision, though perhaps with some symptoms of strain In 1935 Professor Ames,[8] working on physiological optics at the Dartmouth Eye Institute, Hanover, New Hampshire, reported that there was often a disparity in size of the optical images even in isometropia To this difference, which could not be accounted for by refractive error, the term aniseikonia was applied The difference was usually only 0 25–0 5%, but in people complaining of asthenopia it might be 1 5–1 75% To diagnose the condition he invented the tipping table and an instrument named the eikonometer, and he prescribed special lenses for the condition No exact figures of cases are yet available, but it seems that a third of his cases are relieved of their symptoms while another third report partial relief Field,[9] of the North Western University medical school, finds, as one might expect, that most of the patients referred to him for aniseikonia were in need of more adequate refraction and investigation of their muscle balance and convergence powers Until more convincing evidence is forthcoming most ophthalmologists will agree with Field that aniseikonia is not a common cause of asthenopia It must be remembered that there are always some patients who will be relieved by the psychological effect of a lengthy investigation with elaborate instruments and the subsequent prescription of an expensive pair of glasses

STRUCTURE OF VACCINIA

SLOWLY some of the mysteries of the viruses are being unravelled while others tend to become more complicated It becomes increasingly clear that their properties as viruses are so divergent that generalities must be avoided They range in size from those of vaccinia, myxoma, canary pox, lymphogranuloma venereum and rabies, all between *125 and 175 $m\mu$ in their* largest diameter, down to poliomyelitis (human and mouse) at about 12 $m\mu$ and foot-and-mouth disease at about 10 $m\mu$ The viruses of lymphogranuloma venereum and a new mouse pneumonitis virus are susceptible to the action of the sulphonamides and thus so far different from all the rest Vaccinia, one of the largest and most highly organised of the viruses, has been intensively studied by Hoagland and his colleagues[10] They found that the elementary bodies of vaccinia are composed chiefly of protein, thymonucleic acid, lipid and carbohydrate in concentrations not much different from those found in bacterial cells They have since found small amounts of biotin and riboflavin present In purified suspensions they have also found a copper constituent in a concentration amounting to 0 05% of the dry weight of the virus , a 25-fold increase occurring during purification of the virus In contrast to this Sprince and Schoenbach[11] have failed to demonstrate significant amounts of riboflavin, pantothenic acid and biotin in moderately concentrated solutions of purified tobacco mosaic virus which is only about 1/5 the diameter of that of vaccinia The elementary bodies of vaccinia have also been shown to respond to osmotic influences and to be antigenically complex The use of the electron microscope has given new opportunities for observing any structural difference that may help to explain their action and differentiate between the bacteria and viruses Von Borries and the Ruskas[12] in their original experiment found the virus particles of vaccinia somewhat oval in shape and uniformally opaque Green, Anderson and Smadel[13] have obtained the same picture with unwashed stored preparations of vaccinia but when these were rewashed immediately before use *they* presented a high degree of regularity of external outline and internal form The particles are almost rectangular in shape, resembling a brick, and contain five areas of condensation, the central one being slightly larger than the remaining four Heating for an hour at 56° C , dehydration in a vacuum over P_2O_5 and drying from the frozen state did not appear to alter the internal structure The various stages of dissolution by alkali treatment, ranging from swelling, blurring of the edges and decreasing density of the substance to complete laking, could be clearly seen After exposure to hyperimmune vaccinia rabbit serum, the rewashed

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[5] See *Lancet* Aug 1 p 136

[6] Relief and Reconstruction in Europe , an Interim Report by a Chatham House Study Group London Royal Institute of International Affairs Pp 40 1*s* 6*d*

[7] Medical Relief in Europe Questions for Immediate Study By Melville D Mackenzie, MD Pp 67 2*s*

[8] Ames, A jun *Amer J Ophthal* 1935, 18, 1014

[9] Field, H B *J Amer med Ass* 1942, 119, 132

[10] Hoagland, C L , Smadel, J E and Rivers T M *J exp Med* 1940, 71, 737 Hoagland, C L , Lavin G I , Smadel, J E and Rivers T M *Ibid*, 1940, 72, 139 , Hoagland, C L, Ward S M Smadel J E and Rivers, T M *Proc Soc exp Biol N Y* 1940 45, 669 *J exp Med* 1941, 74 69, 133

[11] Sprince, H and Schoenbach, E B *Proc Soc exp Biol N Y* 1942 49 115

[12] Von Borries, B , Ruska, E and Ruska, H *Klin Wschr* 1938, 17, 921

[13] Green, R H , Anderson, T F and Smadel, J E. *J exp Med* 1942, 75, 651

DIGESTIBILITY OF NATIONAL WHEATMEAL

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ACCORDING to a statement attributed to Drummond (1942) the Ministry of Food were largely influenced by considerations of digestibility in advocating the adoption of the national wheatmeal loaf It is therefore important that reliable figures should be available as a basis for comparing the digestibility of national wheatmeal with that of straight-run white flour

Krebs and Mellanby (1942) recorded experimental results which cast some doubt on the validity of the figures used by the Food (War) Committee of the Royal Society (1917) and by myself (1941) in calculating balance sheets of the gains and losses of nutrients resulting from the raising of the extraction level of wheat Unfortunately Krebs and Mellanby's experiments are open to serious criticism in both design and execution In the first experiment the national wheatmeal used contained only 0 45% of fibre, against the standard of 0 60–0 85% suggested by the Accessory Food Factors Committee (1941) and a mode figure of 0 85% on 303 samples examined by the Research Association of British Flour-Millers (1942) In view of the well-recognised relationship between fibre content and digestibility, the use of the low fibre sample by Krebs and Mellanby clearly makes their results inapplicable to ordinary national wheatmeal Moreover they state that the white flour and national wheatmeal were derived from different grists This too, obviously lessens the value of their work, since variations are known to be very wide in the quality of individual consignments of wheat

This error was also made by Wood (1941), who compared a ample of white flour from one grist with samples of three igher extraction flours from another grist As a result, the gures for the digestibility of the white flour sample failed to all in line with those of the other three flours (see graphs) Krebs and Mellanby have failed to note this, and in conseuence wrongly accuse me of misquoting Wood's figures

n their second experiment Krebs and Mellanby did not n fact compare the national wheatmeal with white flour at all an attempt was made to arrive at a digestibility igure by comparing the fæcal output of a "control" diet of meat, fish, margarine, bacon, cheese, milk, potatoes, and mixed vegetables, with that of a diet in which unlimited quantities of national wheatmeal bread replaced half the mixed food intake In the control period the energy intake was 1850 calories per day in the experimental period 3450 calories per day, while the protein content of the experimental period was over double that of the control period Moreover the final calculated digestibility was not merely compared with that of a white flour derived from a different grist but with a figure arrived at by Macrae and his colleagues (1941) in an entirely different experiment of entirely different design The results obtained by individual workers vary so widely that such a comparison is meaningless

If, then, the results recorded by Krebs and Mellanby cannot be accepted what basis of calculation should be used in comparing the digestibilities of national wheatmeal and white flour ? A review of the relevant literature over the past 40 years indicates that a reasonably sound basis can be arrived at without further experimental work The object of the present article is to summarise the results recorded over this extended period and to attempt to establish acceptable figures

PERCENTAGE DIGESTIBILITY

The experimental methods adopted in most of the earlier work were similar consisting of the direct substitution of one type of bread for another in a diet of otherwise constant composition The analytical methods used were essentially those still employed in such work the Kjeldahl method for total nitrogen, and a bomb calorimeter or calculation from the total proximate constituents for total energy The types of flours used by different workers varied widely however Wood (1911) used flours of 70%, 80% 88% and 92% extraction, while Rubner (1918), whose experiments were specifically concerned with Germany's war-time bread supply, used flours of 70%, 80%, and 95% extraction Hamill (1911) based his conclusions on a thorough review of earlier American work which dealt in the main with white flour so-called entire wheat flour, and Graham (wholemeal) flour "Entire wheat flour" appears from Hamill's description to be similar to the present-day national wheatmeal The Royal Society Committee's Report (1919) was concerned with two levels of extraction—78% and 88% The work of Macrae and his colleagues was also carried out with flour of two extraction levels—73% and 100% It will be seen, therefore that the collected results cover a wide range of extraction levels and refer to work carried out in widely different localities and at varying dates

An examination of these collected results shows that, while the *absolute* levels of digestibility varied widely from one set of experiments to another all workers have recorded a considerable fall in digestibility with increasing extraction The extent of this fall is shown in the graphs, in which the collected results have been plotted on a composite diagram after conversion to a common basis For this purpose the digestibility of 70% extraction flour has been arbitrarily taken as 100% and the remaining values have been recalculated in proportion[1] The two graphs show clearly that all the curves fall as the extraction level rises, though the rate of fall varies widely with individual workers, the variation being greatest for the protein values From these collected results it is possible to arrive at representative mean percentage reductions per unit increase in extraction level The figures work out at 5% reduction in protein digestibility and 4% reduction in energy digestibility for each 10% increase in extraction If such figures are applied to the mean absolute values of digestibility of white (70% extraction) bread, the results noted in the table are obtained These values may be compared with the American figures recorded by Hamill for white flour and for the same flour with finely ground bran added, a mixture which might reasonably be compared with national wheatmeal Hamill's figures of percentage digestibility which agree closely with the mean values are as follows

MEAN VALUES OF DIGESTIBILITY

Extraction level %	Percentage digestibility Protein	 Calories
70	*88*	*94*
75	85 7	92 1
85	81 4	88 4
Difference	4 3	3 7

	Protein	Calories
White flour	90 9	92 1
" " plus bran	85 9	87 6
Difference	5 0	4 5

In general, the protein digestibility values recorded in the table show a significantly smaller difference than those which formed the basis of the Royal Society's original estimate and of my own calculations (89% and 81%) but a significantly larger difference than those recorded by Krebs and Mellanby (91% and 89%) The energy values closely approximate to our figures which were 92% and 87% respectively, but again show a slightly larger difference than those of Krebs and Mellanby (97% and 94%)

PROTEIN AND ENERGY CONTENTS

In arriving at the total digestible nutrients contained in the two types of flour it is however, at least equally important to take into account the relative contents of total protein and energy As with the digestibility values, it is admittedly not easy to arrive at typical representative figures As regards total protein, the mean values recorded in Hamill's review work out at 12 07% and 12 57% for white flour and wheatmeal respectively—a difference which agrees closely with that calculated from the analyses given by McCance and Widdowson (1940)—that is, 11 0% and 11 5% At the

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[1] The figures given by the Royal Society relate to the digestibilities of the diet *as a whole* and not to the bread alone To obtain comparable figures for the various types of bread the results require recalculation Wood's published figures for energy relate to percentage utilisation and not to actual digestibility for the latter values recalculation is necessary The figures used in the present paper are in both cases the recalculated values

1 pint of milk) Equally important is the absorption of this calcium and vitamin D must be given to the pregnant woman For postnatal prevention every infant, including the breast-fed, must receive vitamin D by mouth as early as is practicable It is doubtful whether enough cod liver oil can be given to the very young infant without upsetting the digestion, and Clements therefore advises a vitamin-D concentrate in a dosage of about 400 international units per day

CONTINUOUS SPINAL ANÆSTHESIA

ANY method of anæsthesia which depends on the single injection of the whole dose has disadvantages People vary in their susceptibility to drugs and a dose just sufficient in one person to maintain the right level of anæsthesia for the required time may be excessive for another person In order to overcome this obstacle W T Lemmon and G W Paschal[1] have devised a technique for carrying out what they call serial fractional controllable intermittent spinal anæsthesia , and in an account of a series of 1000 operations they make out a very good case for the procedure Naturally, since the needle has to be left in position throughout the operation, a special needle and a special mattress with a gap in it are needed in order to avoid all possibility of breaking the needle Stout small-bore tubing 30 in long connects the needle with the syringe which has a Luer Lok plug to meet the stopcock on the tubing and prevent any escape of cerebrospinal fluid The authors use procaine hydrochloride ('Novocain'), dissolving 500 mg in 10 c cm of CSF of which 2–3 c cm are introduced into the subarachnoid space when the stopcock is closed During the induction period the patient is kept in 5° Trendelenburg position If after 10 min the degree of analgesia is not enough an additional injection of 1 c cm is made, and other supplementary injections are made whenever necessary in the course of an operation Lemmon and Paschal find it takes about 90 sec for the added dose to exert its full effect In long procedures they give the supplementary doses at fairly regular intervals, usually every 30 or 40 min As preoperative medication they always give phenobarbitone on the night before operation as well as 3 hours before it, and also an injection of morphine and scopolamine If necessary they repeat the morphine injection in the course of the operation either intravenously or subcutaneously The average length of operation in the recorded series was 50 4 min , but one gastrectomy took over 3½ hours The average dose used was 220 mg though with operations above the diaphragm the usual dose needed was much higher than this, being 445 mg A 5% solution made by dissolving the procaine crystals in the cerebrospinal fluid was found to be the most satisfactory strength There were no deaths attributable to the anæsthetic, but headache and pulmonary complications were about as common as they are after the usual spinal methods

CHRONIC STREPTOCOCCAL ULCERATION

F W Taylor[2] has found the hæmolytic streptococcus as the infecting organism in a series of cases of chronic ulcer of the extremities, and believes that this is a type of ulceration too little recognised because it is unsought , it responds dramatically to sulphanilamide by mouth The ulcer is a distinct entity, not associated as a rule with vascular impairment Children and young adults are mostly affected, the initial lesion being a slight cutaneous trauma such as an insect bite, not specially painful The ulcer is indolent with slight surrounding reaction The fact that the lesion is so chronic and is unassociated with lymphangitis or œdema is likely to prevent the surgeon suspecting its hæmolytic streptococcal origin The organism is obtained from the ulcer in pure culture or may have a contaminant, such as *Staphylococcus albus* The lesion is quite distinct from the burrowing ulcers described by F L Meleney Its margins are reddened and may or may not be undermined, while the base is covered with pale granulation tissue which exudes a watery serum Among 31 cases in Taylor's series all but 2 appeared on the lower extremity, but two children showed several ulcers over the dorsum of the hand and arm The ulcers ranged in diameter from 1 cm to 6 cm , had been present from two weeks to four years, and had been treated with a great assortment of external applications Treatment with sulphanilamide was mostly carried out in outpatients The dose given to adults was 1 3–6 g by mouth daily Doses of 4–4 5 g daily were sufficient, but smaller doses were on the whole ineffective Only 19 of the 31 cases received adequate doses , these ulcers all healed, whatever their previous duration, in an average of just under a fortnight, and they remained healed Taylor is now experimenting with local application of sulphanilamide, which he thinks should give good results

EMOTIONAL LEUCOCYTOSIS

THAT infection is not the only cause of leucocytosis has often been noted[1] , one of the most curious of these non-infective leucocytoses is that associated with emotion A high white cell count is not an uncommon finding in mental patients and the reasons advanced have been fever, dehydration, or some obscure infection Wittkower[2] showed that leucocytosis could be caused by suggesting various emotions to hypnotised patients, this and similar investigations did not support the infection theory Milhorat, Small, and Diethelm[3] have now studied the problem in mental patients They took special care to use accurate methods to get as near basal conditions as possible for the "resting" counts, and to avoid well known traps like diurnal variation In their group of 200 patients, 34 had infectious diseases which were likely to affect the white cell count and 15 of them had counts of over 10,000 per c mm , excluding these, 26 5% had white cell counts over the 10,000 per c mm mark These leucocytoses were not limited to any particular mental disease but they were clearly related to the emotional state of the patients The behaviours most often associated with leucocytosis were 'panic reaction, depression with agitation, excitement with over activity and anxiety, and excitement with overactivity and elation " Sadness without anxiety, and elation without anger, were not accompanied by leucocytosis Counts up to 21,000 per c mm were registered but the differential count did not vary No evidence of dehydration with consequent blood concentration was detected Further evidence was provided by giving the patients intravenous 'Sodium Amytal' in doses sufficiently large (0 3–0 5 g) to produce definite symptoms like slurring of speech , these doses were followed by mitigation of the exaggerated emotional state, and there was a corresponding fall in the elevated leucocyte count When the leucocyte count was not raised, sodium amytal did not affect it, though the emotional changes were induced just the same Sodium amytal was also given in the same dose to a patient with non emotional leucocytosis and although the narcotic effects appeared as usual the white cell count remained raised Milhorat and his colleagues attribute this emotional leucocytosis to a redistribution of leucocytes from the reservoirs in collapsed capillaries of resting muscle, liver, lungs and spleen brought about by the circulatory changes which accompany emotional reactions , as adrenaline is known to produce leucocytosis they suggest that this hormone has a part in the reactions In all this they are in line with and confirm previous views

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[1] *Surg Gynec Obstet* 1942, 74, 948
[2] *J Amer med Ass* 1942, 118, 1196

[1] See *Lancet*, 1941 ii, 42
[2] Wittkower E *Klin Wschr* 1929, 8 1082
[3] Milhorat A T Small S M and Diethelm, O *Arch Neurol Psychiat* 1942, 47 779

In England Now

A Running Commentary by Peripatetic Correspondents

THE peripatetic who suggests "homo alternans" as a suitable generic name for mankind doesn't think a whole lot of us medical planners Well, it is only fair to say that some of us don't think a whole lot of him If he is not prepared to believe that, by taking thought, man can add a cubit to his material and moral stature, he will find a formidable array of hard fact and enlightened opinion ranged against him The real subconscious (his word, not mine) argument against medical or any other kind of planning is that it is hard work, not only does it demand the acquisition of a great deal of information, some of which may be very distasteful to one's personal prejudices and cherished beliefs, but it also entails much critical and self-critical, constructive, and imaginative thinking Why must all planning be pro-bureaucratic and anti-individualistic? Does he really suppose that we are not considering the points of view of the warriors or that there are no planners among them? Does he assume that all these young men and women in the Services are so delighted with the world as it is or with medicine as she is practised that their one hope is to see her stay as she is for ever? And what about the 40 odd millions of patients, actual or potential, in these islands, are they all quite satisfied that they get the squarest possible deal when they are ill? All planners have always made, are making and will continue to make "enormous and manifold errors" and miscalculations, but the fact that we failed to create a new heaven and a new earth after the last war does not strike some of us as an adequate reason for not trying again And despite the jeremiads, the cynicism (which Pasteur, I think, called sterile) and, worst of all, the resignation of the sub-group homo automaticus, try again we will

* * *

Now that the crowds have melted, the President of the Board of Education is back in London, and they are pulling down the centenary bunting we may creep out and examine with a little detachment that awesome, Jehovah-like figure with side-whiskers, deep-set eyes, and protruding lower lip, Thomas Arnold, 'zealous, beneficent, firm" Mr Butler said that had he been alive today he thought he would have approved of the educational reforms contemplated by Mr Butler This claiming as an ally somebody who is dead or not yet born like "the historian of the future" is all nonsense In the unlikely event of the same dynamic, one might almost say original Thomas Arnold reaching the age of 147 it may be safely said that he would not have approved, but fought like a tiger for these reforms 50 years ago What he would be fighting for now is not vouchsafed to us it would be 50 years ahead of our present ideas, for we have the myopia of mediocrity When one remembers that "this champion alike of reverent faith and independent thought" very nearly had his career as a schoolmaster wrecked by scurrilous Tory attacks on his liberal opinions in social and theological matters I think it exceedingly doubtful whether he would have approved of Mr Butler or Mr Butler of him He was the antithesis of a yes-man, a big, capital No-man In fact he would have made the last 50 years very uncomfortable for many of us "sternly repressing the bad," entirely for our good Like the mammoth, who may have taught man how to sprint, he was a great benefactor

Which brings one to the obvious but little understood question of leadership in democracy The real leaders are, of course, the Press, the Pulpit, and the Prevailing Wind—that is to say original thinkers or strong characters or conglomerates They put their views into circulation and after 1–50 years the people say, "That's rather a good idea, let's do it" Then they look round for some rather compliant individual and say, "Look here, you've got to go to Parliament and do this for us" That's why it's silly to think of political heads as leaders It only rarely happens that strong characters can get the approval of Demos Then it is as a rule on other than political grounds, hence the PM In war-time matters are different, but one must not expect too much from the housemaid Another schoolmaster who was a leader in the true sense, 50 years ahead of his time, who has done more perhaps for positive health than anyone in the last hundred years in this island except B-P, was Almond of Loretto His ideals of hardiness and simple dress have been followed not only in this country but all over the Antipodes Last week going through Pangbourne I was glad to see they have adopted the Loretto style at the Nautical College, now under an old Loretto boy It is rather surprising that there haven't been more headmaster leaders when one thinks of their opportunities of platform and constant stream of potential disciples The reason, I think, is that most of them have been chosen for scholarship a habit of word-thinking that cramps the vision, makes for stasis and orthodoxy, a form of specialisation from which few return, an irreversible addiction

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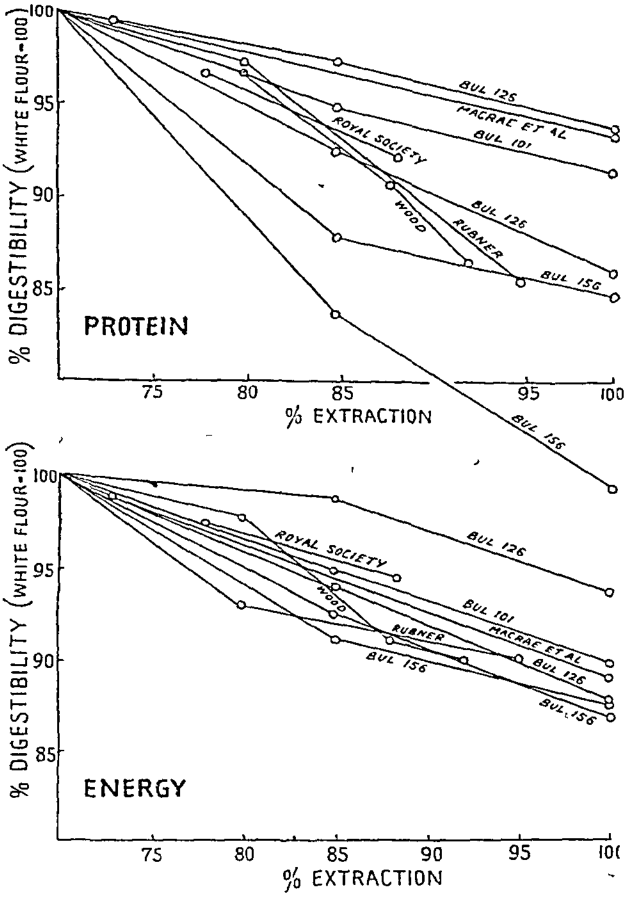
The medical transport officer put down his fourth glass of gin "Thanks very much" he remarked "I'll send those six cot cases and five walking cases over before the ship sails and I should keep an eye on three of them, they're a bit barmy" With that he departed and I rang up the sick bay to tell them what to expect, and that I would inspect them in the dogwatches I sat down to lunch with the pleasant anticipation of getting my head down for the afternoon At 14 15 I was rudely awakened by my sick-birth chief petty officer He carried in his hand a well-thumbed copy of King's Rules and Instructions and with a sinking heart I saw his thumb on the part about the duties of the senior medical officer With a further sinking I saw he had his leading sick-berth attendant with him and that he in his turn was loaded down with Admiralty Fleet Orders The MTO's remarks "three of them may be a bit barmy" suddenly came to my mind and we were three hours out of harbour All too soon I was buried in orders AFO 7932/22 was intensely depressing and seemed to indicate that ratings suffering from mental derangement should be under the constant eye of a medical officer AFO 17532/26, however, was more cheerful and without doubt threw the whole onus on the captain of Marines The little procession now headed by myself proceeded to the captain RM's cabin and to our delight we found he had his head down also With considerable adroitness he parried every thrust until I pressed home with AFO 17532/26 He was a beaten man and the issue was no longer in doubt Nine Royal Marines duly appeared in the sick bay and divided themselves into three watches The isolation ward became our mental ward and for the rest of the voyage it rang with the delighted laughter of the escort and the dry remarks of our lunatics who were obviously highly enjoying themselves The voyage continued peacefully, and our patients became the life and soul of the ship During their spells of exercise on the fo'c'sle, they were more often than not the centre of a happy throng, and the captain's remark that "If those are lunatics the rest of us are stark raving mad" sounded rather true This had been the opinion of the ward room for a good many months The worse jobs the ship was given the happier the ship became, and for some time it had been noticed that officers visiting the ward-room viewed us with a slightly alarmed air

It was difficult to explain the mental process of a young pilot who was returning on board in his aircraft from a duty trip to a station on the West Coast of Africa when he crashed on deck He climbed out of the remains of his aircraft and with a hangdog air and his hands behind him approached the captain, who was fuming with rage at the end of the flight deck Before the captain could let out his first bellow, the pilot produced a pineapple in each hand and said "I brought these for you, Sir" The war cry of the ship, which ward-room officers performed on suitable occasions, was a frequent cause of perturbation and the ammunition locker had often to be used for incarcerating young officers who became too disorientated In such surroundings the lunatics became indistinguishable from ourselves and I still remember the efficient RAMC officer's expression when he came on board to collect them and was told that though they were labelled 'Mentally Deranged" there was nothing the matter with them as far as we could see

* * *

It was obvious when we arrived at the hotel why the proprietor had been so gushing over the telephone, promising us Room —, apparently the best in the house The place was more than half empty We had been other extreme, the Rowett Institute tables (1938) give 12 6% and 11 7% for white flour and wholemeal which, if calculated for 75% and 85% extraction, would show a difference in the opposite direction of 0 3% All these values are obtained by interpolation A more satisfactory figure might be obtained from direct determinations on present-day samples of white flour and national wheatmeal Typical analyses carried out by Gordon Hay (1941) give values of 12 0–12 1% for white flour and 12 38–12 44% for national wheatmeal, a difference of 0 35–0 38% This difference is slightly higher than that recorded by Hamill for white flour with and without added bran (i e 0 29%) It thus appears that as I stated in my original paper, by adopting a difference of 0 5% both the Royal Society and I were unduly weighting the calculations against white flour, and that a figure of 0 35% would have been preferable



Graphs showing effect of extraction of wheat on the digestibility of the protein and energy of flour Reference to Bulletins will be found in Hamill's review (1911) for the remaining authorities see list of references at end of my paper

A similar conflict of views is apparent in considering the energy contents of the two types of bread Figures interpolated from the values given by McCance and Widdowson give 370 and 355 calories per 100 g for white flour and wheatmeal respectively The Rowett tables, on the other hand show a negligible difference between the two flours, while the mean of Hamill's figures shows a slight balance in favour of wheatmeal In these circumstances the adoption of the same value for both types of flour—364 calories per 100 g, the figure used by the Royal Society committee and myself—appears to be justified

FINAL BALANCE SHEET

The problem which both the Royal Society committee and I attempted to solve was whether the raising of the extraction level by 10% (e g, from 75% to 85%) would result in a net gain or loss of nutrients, taking into account not only the nutrients contained in the flour but also the value of the animal products produced from the available wheatfeed The Royal Society committee assumed that this wheatfeed would be converted into pig-meat for reasons stated in my earlier paper, I based my calculations on the assumption that it would be used for milk production. It appears from a recent statement made by the parliamentary secretary to the Ministry of Food (1942) that in the official view the loss of wheatfeed will result in a reduction in milk, eggs or meat For the purpose of calculation, and particularly in view of the facts noted in a current article (Wright 1942), it will be simplest to adhere to my original basis of calculation. Bacharach (1941) has pointed out that a balance sheet can be drawn up in two ways by assuming a constant weight of grain, or by assuming a constant level of flour consumption The former will give the *theoretical* gain or loss resulting from a change in the extraction level, the latter the *actual* loss of nutrients, taking into account the accompanying reduction in shipping tonnage

Using the new digestibility figures and incidentally adopting a correction suggested by Lester Smith (1941), the first method indicates that the raising of the extraction level should theoretically result in the loss of about 1000 tons of protein but the gain of sufficient energy to supply about 40 calories per head per day—though at the cost of many million gallons of milk The second method shows, however, that in actual practice the adoption of an 85% extraction level will result in a net annual loss of over 60,000 tons of protein as well as of over 1,600,000 million calories Krebs and Mellanby state that my original arguments against the raising of the extraction of wheat to 85% are not substantiated by their new data A re-examination of the balance sheet of nutrients in the light of the collected results reviewed in the present article does not support this rather sweeping assertion If, as is now advocated by Sir Ernest Graham Little (1942), the extraction rate were to be raised to 95–100% (that is, if the wholemeal loaf were to be compulsorily adopted) these already serious losses would be more than doubled

SUMMARY

The results recorded by Krebs and Mellanby for the digestibility of national wheatmeal are open to criticism

The collected results of earlier workers are reviewed, and the following mean values for protein digestibility adduced white flour 86%, national wheatmeal 81% For energy digestibility mean values are white flour 92%, national wheatmeal 88% For protein content white flour 12 00%, national wheatmeal 12 35% For energy content white flour and national wheatmeal, both 364 calories per 100 g

Judging from these figures, the annual losses of nutrients resulting from the adoption of the national wheatmeal loaf amount to over 60,000 tons of protein and over 1 600,000 million calories, adoption of the wholemeal loaf would more than double these losses

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Royal College of Obstetricians and Gynæcologists—At a meeting of the council held on July 25, Sir William Fletcher Shaw was re elected president The following officers were also elected vice presidents, Prof William Gough and Prof C G Lowry, hon treasurer, Mr J P Hedley, hon secretary, Mr G F Gibberd hon librarian Wing Commander Frederick Roques, and hon curator of museum, Mr Aleck Bourne

Dr L C L Averill, New Zealand, was admitted in absentia to the fellowship The following were elected to the membership

Herbert Agar Muriel Boycott, J W D Buttery Marie H Calverley, T A Gillie, I M Jackson, W J McCord Mary K Lawlor, H M Wolff, and J F B Wyper

2 The induction with ethyl chloride is better carried out as the child lies asleep in bed before any moving is done.

3 At the first sign of restlessness after the operation, and in my experience this is more common than is implied by Gerrie and MacKenzie, an opiate should be given. 'Nepenthe' in doses of 1 min. per year of age is very efficient given hypodermically. This ensures quiet sleep for some hours and does not interfere with coughing or swallowing.

By these various means a guarantee in every case can be given to an anxious mother—rightly and reasonably anxious too—that her child will not know that he has had an anæsthetic or a tonsillectomy. There is no added risk in the anæsthetic provided that it is given carefully and with knowledge; but again, have we not now left behind us the days when "just a whiff of anything" was good enough for a child's tonsils?

A Military Hospital DOUGLAS BELFRAGE

USELESS AND DOUBTFUL DRUGS

SIR,—Dr Keele honestly displays his bias when he describes himself as a pharmacologist concerned largely with teaching students. It must be as annoying to such scientists to find practising physicians successfully using drugs which they have proved useless as it was, for example, to find people persistently using butter instead of margarine before the discovery of vitamins. Dr Keele seems to have forgotten that it is impossible to prove a negative and because he cannot in the laboratory find sound reasons for the use of a drug that is no sound reason for the exclusion of that drug from use: it is merely a sound reason for further research, preferably in the field of clinical medicine as well as in the laboratory.

The rôle of the pharmacologist is to discover the modus operandi of drugs rather than to decry the use of those whose mode of action he cannot discover. It is emphatically not his function to ask doctors to disbelieve their own experience because he has not himself made similar observations. The history of ergot and Barcroft's researches on fœtal respiration are both examples which justified the practice of the general practitioner and proved the dicta of the pharmacologist faulty. The teaching aim of the latter should be to instruct his students in technique and knowledge, and above all to cultivate in them that critical observation which will enable them later on to use drugs not because they are recommended in books but because they themselves have proved their worth in actual practice. When a method of research proves a placebo more powerful than drugs used with success by practitioners I think it is at least as reasonable to question the validity of the method as to accept its conclusions. Such researches are statistically interesting, but we do not yet know enough about any people or disease satisfactorily to apply statistical methods to them. I remember Sir Ronald Ross about 1913 glorying in a lecture that our knowledge of malaria had reached such a stage that we could now apply to it the methods of higher mathematics, but experience in the last war soon proved him wrong. Angina may be a striking event but its ætiology is not perfectly known and I have little doubt that if W. Evans's cases had all been under their own doctor's care they would have received individual treatment with better general results. Individuality in treatment is essential in medical practice, but it is necessarily ignored in medical textbooks which have to treat abstractions as if they were realities—i.e., discuss diseases instead of patients—and all too often hospital practice follows suit.

About 1915 I was as complete a therapeutic nihilist as anyone, but I have come to have a great respect for some of the older physicians like Yeo and Brunton who discoursed at length about prescriptions not only with an air of conviction but as the result of long experience and observation. The wise physician does not prescribe 'a small number of drugs with clearly demonstrated actions'; he studies his patient and knows that the balance of the prescription is of real importance, and not infrequently finds that an apparently small change in it produces greatly enhanced results. Clinically I am often surprised at the way in which patients detect quite small alterations in their medicines even though there has been no appreciable difference in taste, &c., and almost always their description of the changed effect is what one might expect. Can Dr Keele explain from his laboratory why small doses of diamorphine for example, make some people bad, and why even so innocuous a substance as peppermint will make some patients really ill? It is easy enough to call it idiosyncrasy or "psychological," but this is only ignorance under another name; and it is these psychological troubles which trouble many of our patients and which one psychological bottle of medicine will help to put right while another equally psychological will not.

The trouble with Dr Keele's teaching is probably that it is not based on experience in actual practice and this is largely true even of the hospital consultants. They are debarred from private practice and as a result never get the day-to-day, and sometimes hour-to-hour, experience of their patients which a doctor gets in general practice. Instead they surround themselves with the tremendously curative properties which—in our present civilisation—are attached to the ideas of specialist and hospital. They can put the patient to bed in standard conditions, where they do little but investigate him for a week or two, by which time he has adapted himself to these conditions and, unless he is suffering from the textbook diseases which Dr Keele wishes to treat with his few standard 'drugs with clearly demonstrated actions' he is sent out as cured or as having nothing discoverable wrong with him, only to relapse when he returns to his old conditions. While an inpatient he may have been treated with a bottle containing some simple drug or placebo and the budding medical student has been shown how little is the actual effect of such medication in producing the cure which, such as it is, mainly results from the regimen to which he has been subjected. Thus we breed a race of students ignorant of their own ignorance and anxious when they are qualified to carry on their work in conditions similar to those to which they are accustomed in clinics, and so escape the troubles which harry the general practitioner and make up much of the sickness in this country.

For in general practice our patients mostly cannot afford to stop work; they come to us not to be labelled but to be treated and if possible cured. Their deviation from normal may not be great, but it is irritating or worse and often elusive. In such conditions most of us do contrive, largely by our bottles of medicine, to give some relief and help the person back to health without the loss of time or the capital expenditure of consultant or hospital. Let the consultant criticise our methods by all means but let him remember that the problems and circumstances of our treatment are those that he himself has never actually encountered. The pharmacologist is still further removed from general practice. Perhaps we might even help to solve some of his problems if he did not so airily dismiss ours and pretend to a knowledge which is obviously incomplete. Doctors do not necessarily become fools when they become GPs, and some of us like to think we are doing our work as intelligently as we should if we had specialised in pharmacology.

This is not intended to deprecate the labours of pharmacologists or consultants for few can appreciate their help more than I do. It is merely to deplore that we work largely in different worlds.

Winsford, Cheshire W. N. LEAK

SIR,—There is something about drugs which leads to extremes in the attitude of those who have to deal with them. On the one hand are the manufacturers of proprietary medicines—"ethical" as well as "non-ethical"—who tend to use nothing but superlatives in describing their products. On the other are the critics, who launch out into sweeping generalisations against medicines, revealing a spirit no more scientific than the others. Dr Keele's letter of July 25 is an example of the latter class. How far is it correct to say that there is no sound empirical evidence that many drugs have any therapeutic value? What is sound empirical evidence? Dr Keele is apparently prepared to accept the evidence of one investigator, Dr Alstead, as sufficient to establish the inefficiency of ipecacuanha, iodides and bismuth oxycarbonate, but rejects the experience of *innumerable* practitioners. The folly of decrying such experience without the most thorough examination is well illustrated by the case of ext. ergotæ liq. of the BP rather nervous when our inquiries were received so warmly. This was by no means the first hotel in the neighbourhood we had tried and they had all been full. And after all it was our first holiday since the outbreak of war and was only to last four days, including a Saturday and Sunday. It would be tragic if it was ruined by uncomfortable quarters. The plunge, however, was duly taken and not regretted. The only other male inhabitants, apart from myself, were the proprietor (*a cast-off member of the aristocracy was our diagnosis*), a waiter in his 30's (*why wasn't he in the army?*) and a youth whose intelligence by no means matched his willingness. The visitors were the usual heterogeneous collection of females who seem to exist nowhere but in hotels, mostly rather antique, all very loquacious and none prepossessing.

Gastronomically we had little to complain of, but one piece of advice I would pass on to anyone who has not yet sampled hotel life in war-time: take your own marmalade. It was only provided on alternate mornings. Otherwise we were well cared for—eggs twice for breakfast, meat or fish for both lunch and dinner each day, though possibly the helpings were on the small side. Of beer and gin there seemed to be no scarcity; at least there was ample for my moderate purse. A large notice in the bar announced "No Doubles," but that did not prevent the platinum blonde who arrived for dinner one evening getting two "double gins" as an aperitif. Newspapers were unobtainable and as the only wireless set was invariably surrounded by a circle of chattering females at 9 o'clock we were deprived of the doubtful pleasure of hearing the news. For some odd reason there seemed to be no scarcity of Sunday newspapers; the waiter astonished us at Sunday breakfast by coming to ask which one we would prefer.

So passed the four days in arcadian calm—breakfast, a leisurely walk, lunch, siesta, tea, another stroll, drinks, dinner, bed. The only evidence of war was an occasional military lorry and a bar-load of Canadian soldiers in the evening. There was scarcely a car on the road, and even pedestrians were few and far between apart from "locals." And these Surrey lanes are lovely—a good second to the Cornish ones. The only depressing sight was the derelict appearance of so many of the lovely houses; not the stately mansions—these we avoided—but the smaller houses built and occupied by the successful professional, military or business man. They were still occupied but everywhere was evidence of neglect; paint was obviously considered a luxury, the flower gardens were overgrown, the hedgerows were uncut. Here was the impact of the war on this lovely countryside.

Yes, the hotel served our purpose well. It provided the panacea for all ills these days—a brief escape from the realities of the day. But (mention it not in Gath!) the main effect of my holiday was to make me thoroughly discontented for the next few weeks. The almost unbroken work habit of three years had been rudely shattered. When *would* the war end?

* * *

A dozen times this year I have asked gardeners in action what they are thinking about, and I find their minds are projected three or four months ahead. That a man who is planting out lettuces should see and gloat over the prospect of their succulent maturity is not surprising, but that one working in the glory that is June should be filled with autumnal longings, or that he who might be enjoying the consummation of harvest should find the prospect of bleak December ploughland compellingly attractive, stirs thought. It is easy to see how this trick of prevision would quickly act selectively, benefiting and preserving him who stored, and staying the nomad. When some future Darwin comes to write the natural history of man, when the psychologists have waded out of the Freudian swamp, have climbed a little and distanced their horizon, then it may be found that this ability to see in pictures the scene some moons ahead, having divided birds into migratory and resident, having made hibernation in mammals possible, has played an important part in man's evolving. It is the essence of good husbandry and business, of strategy and the lust for planning; it is the cause of divine discontent with the present, and in the musically and aerially minded it has defined the life hereafter; but it has undoubtedly misled many into thinking they can spot the winner of the 2.30.

Letters to the Editor

WHAT IS GANGRENE?

SIR,—In a recent pathology examination the answer to a question on gangrene puzzled my coexaminer and me by stating, almost consistently, that gangrene is necrosis plus putrefaction. Each of us doubted this definition, having always held that bacteria play no constant part in the causation of the dry variety. However, we found that the answers reproduced what the students had been taught and that this teaching appears in many modern textbooks—e.g., Muir, Boyd and Karsner. Other books (e.g., MacCallum, Green and Aschoff) do not consider the presence of putrefactive bacteria essential to gangrene as a whole, though mentioning it, of course, in connexion with the moist variety. Kaufmann (1929) holds necrosis and gangrene to be interchangeable terms and writes: "The entrance of organisms of decomposition produces softening, that is moist gangrene."

A short search for evidence of putrefactive bacteria in dry gangrene was fruitless, and discussion in a group of four professors of pathology or bacteriology and a number of other experts betrayed a striking absence of corroboration. I came to the provisional conclusion that recent pathological writers have been over anxious to find a scientific way of distinguishing gangrene from necrosis, and to this illicit and superfluous end have dragged in putrefaction. Superfluous because gangrene lays no claim to be a precise scientific term, being far more a clinical or at most a morbid-anatomical conception, and so it does not in the least compete with necrosis. Gangrene, in my view, is a gross manifestation of necrosis with or without subsequent putrefaction. Surgical text-books (e.g., Illingworth) bear this out by defining gangrene simply as massive necrosis. On the other hand, there may be solid evidence that even in dry gangrene putrefactive bacteria are always present. Can any of your readers tell me where such evidence is to be found? If not, writers of pathological textbooks will perhaps make the necessary correction in their next editions.

Oxford. A. D. GARDNER.

CONSIDERATE TONSILLECTOMY

SIR,—It is encouraging to learn from Mr. Gerrie and Dr. Ross Mackenzie in your issue of June 27 that one more hospital has turned its back upon the barbarities of outpatient tonsillectomy in children, though one had supposed that a procedure so characteristic of the philosophy of blood and iron was already a thing of the past in this country.

It should, of course, be axiomatic that any form of surgical operation upon a child should be done without the child's knowledge, in so far as prevailing conditions permit, and that to this end basal narcosis should be as nearly as possible one hundred per cent effective. For large numbers of children undergoing tonsillectomy in hospital the scheme described by Gerrie and Mackenzie is admirable, and I endorse their opinion that pentobarbital ('Nembutal') by the mouth is the best drug available for the basal narcosis. In the absence of the elixir, the powdered drug—not, of course, the capsule—is always taken without difficulty in honey, malt, or other such medium. By contrast, anybody who has often attempted it must know that rectal administrations of paraldehyde or bromethol frequently cause more psychic trauma—or, in plain language, no end of a rumpus—in a nervous child than does the clever administration of an anæsthetic.

The secrets of success with oral pentobarbital are organisation and taking trouble, and in this connexion I would add the following points to the Aberdeen scheme:

1. In non-hospital practice, either in a private hospital wing or in the child's own home—the latter in my experience the best place for tonsillectomy—much is to be gained by operating in the evening. The child goes to bed at the usual time, and with his invariable ritual except for the pleasant surprise of a teaspoonful of honey or what not. He goes to sleep without question, and wakes in the morning with a sore throat, but otherwise oblivious that anything unusual has occurred in his familiar world. To expect a boisterous child to settle down to sleep at 9 A.M., though perhaps inevitable in hospital practice, is to give the game away at the first move.

decry our country, our mode of living and our institutions and it was inevitable that sooner or later our profession would become the target I submit we owe no apology to anyone, and we can look back on the past 20-odd years with the greatest satisfaction at the progress that has been made in giving better service to the public By all means let the process of improvement go on, but what we need now more than ever before, is progress based on stability Let us build on what we already have If radical changes in medicine are the necessity that some people think they are then in all fairness let it be done at a time after the war when those now on service will have an opportunity of putting their views forward, and when the profession as a whole will have the help and advice of those who are now fully *engaged in trying to preserve a future for all of us*

Cheam, Surrey C C BROWN

PERMISSIBLE ON OCCASION

SIR —In his eloquent speech in the House of Commons on July 22 to which Medicus MP gave proper attention in your last issue the Minister of Labour preached the *public health gospel as a major help to efficiency and so* to increased output I sought but missed the opportunity to point out that the demand for increased output may be carried to excess Competition has its dangers A stand must be made against the appeal in the name of patriotism, for long hours no holidays Sunday labour Like alcohol these excesses may be permissible on occasion But they are boomerangs, very soon they diminish efficiency and output They are responsible for much reasonable absenteeism There is no excuse for their continued practice The Industrial Health Research Board has shown the limits and conditions of endurance , but its reports remain unread by those who are most concerned Managements, in their own interest should be required to know the Research Board's specific findings on stated experience

House of Commons FRANCIS FREMANTLE

TREATMENT OF THE CRUSH SYNDROME

SIR,—Mr Patey and Dr Robertson's refutation of a toxæmia as the cause of the "crush syndrome" is a blow at a cherished conception but I am with them in their heresy Here are some of my reasons

1 The occurrence of the syndrome when the main vessels of the limb, above or at the level of the injury were destroyed at the time of injury, which puts out of court, entirely or mostly, the absorption of autolytic products

2 The absence of the syndrome in cases of ischæmic myositis, due to bad splinting or tying a main vessel, leading to Volkmann's contracture, and its absence in street accidents before it became the practice to give massive transfusions

3 The absence of a time relationship between the duration of burial and the development of grave renal failure in air-raid casualties "The average period of burial or crushing has been about 8 hours, but we have recently seen a case in which the patient was trapped for only 45 minutes at most " (Belsey, R H R *Proc R Soc Med* 1941, 35, 329) A man of 24 developed renal failure after having been "pinned for five minutes beneath an overturned Bren gun carrier" (Williamson, J C F L and Janes, J M *Ibid*, p 336) The same happened to a man who was ' extricated almost immediately " after a road accident (Graham, W H *Ibid*, p 335) Of the cases published by the Medical Research Council sub committee (*Brit med J* 1941, i, 449) the average duration of burial of the 5 patients who recovered was nearly twice as long as that of the 5 who died Even micro organisms require a latent period, but reflex actions appear immediately To such reflex action I assign the renal disability, evident on admission in all or in the great majority of air-raid casualties who subsequently develop grave renal failure If a latent period for this does exist it is related to the time of admission and the giving of massive or even not massive transfusions To suppose the renal disability starts from the time of release is to suppose that during the whole period of compression the blood-flow through the limb—the return of blood to the systemic circulation absorption from the dying *muscles—is stopped*

I cannot accept Patey and Robertson s alternative They impute the crush syndrome to the ' loss of blood *constituents into the injured limb* " , it thus becomes a deficiency disease Truly, shock is a deficiency disease, but the deficiency consists not in a *loss* of particular chemical constituents from the blood it is of a physical character The occurrence of œdema in an injured limb, associated with the accession of blood to the skin by the application of heat in people who have been exposed on the battle-field or in bombed houses and have become dehydrated explains the shock noted in many cases only after treatment—the application of heat—has begun The limitation of œdema by bandaging, or the attractive other means advocated by Patey and Robertson as a means of preventing shock, is all to the good—it prevents the administration of a massive transfusion ' But whether it prevents renal failure is another question

In no 7 of the MRC cases polyuria appeared with œdema, or close on its heels A man of 34 buried for 22 hours was admitted ' cheerful " with no shock, and shock did not develop Oliguria was present from the start on the second day the output of urine was 300 c cm , on the third 420 c cm , on the fourth 420 c cm The note for the fourth day adds ' Both legs swelling rapidly and becoming œdematous next day the output of urine was 2190 c cm What other explanation of this can there be but that the vascular system inundation of which had been attempted by pushing fluids but had been largely frustrated by vomiting was decompressed by the rapid pouring out of fluid from the blood-stream into the legs relieving turgescence of the kidneys ? In the same way in a case reported by Ruscoe Clarke (*Proc R Soc Med* 1941 35 339) "Prior to operation"—an amputation—"marked oliguria accompanied a normal blood-pressure . During and immediately after the operation a marked drop in blood-pressure was accompanied by polyuria ' Is it not curious that a marked fall of blood-pressure should be accompanied by polyuria ? Patey and Robertson state that strong experimental support for their view has been furnished recently I have not read the paper, but laboratory experiments cannot blot out the evidence which is afforded by clinical experience on man and appears in reports often in laconic remarks

Essential conditions are sometimes missed, both in the laboratory and at the bedside, and the conclusions in consequence are misleading Patey and Robertson's argument is an example They say that positive intermittent pressure applied to an injured limb may prevent renal failure and in their paper (*Lancet* 1941 i, 780) they described a case (their case 3) But in their recent letter they omit to mention that the fluid intake in this case during the first 24 hours was only 1650 c cm , and on the second day only 1410 c cm The intake was deliberately restricted it appeared to them "that large intravenous injections of plasma or crystalloids before or during the shock phase would tend primarily to increase the loss of blood constituents into the damaged limb with subsequent promotion of traumatic œdema ' That large intravenous injection of plasma by inducing a turgescence can have any pathological effect on the kidney, or that the fluid intake of 7440 c cm (3000 c cm by vein) during the first 24 hours in their case 1, in which compression treatment was not tried and the patient died from renal failure caused or contributed to the renal failure was not considered Nor did they discuss whether the restriction of fluid intake played any part in preventing renal failure in their case 3

Two other points are passed by One is whether heat was applied to the patients In view of the case recorded by Richard Bright in 1827 (Osman A A Original papers of Richard Bright on renal disease London 1937 Case 4), that of a man who being very hot by carrying a great weight ' drank cold beer and lay on damp grass and developed renal failure and died, the state of the skin arterioles seems of consequence The other point is the position of the patient's body This is of the greatest importance in my view the Trendelenburg position is the sheet anchor in the prevention and treatment of shock When renal *failure has* developed, the best posture is the semi-sitting with the feet somewhat raised Renal decapsulation is useless unless done early *in one of two* cases published by Clifford White (*Proc R Soc Med* 1919, 12, 28) the operation was followed by the passage of a large *number* of casts, absent before—the uriniferous tubules (the loops of Henle) could distend

In a case I saw 10 years ago (Hayes, D S and Parmore, R H *Lancet*, 1935 ii, 554) anuria, which complicated an abdominal condition, was treated by two

1914 This preparation was ridiculed by pharmacologists as worthless in spite of the strongest clinical evidence, only eventually to be shown to contain an active principle which fully justified the claims made for it Alstead has certainly demonstrated to his own satisfaction that ipecacuanha and iodides are of little use in the treatment of chronic bronchitis, but his work has not been generally accepted Furthermore, it may be true that bismuth oxycarbonate does not possess the property commonly assigned to it, but the way to settle the issue both in this case and in the others Dr Keele is concerned about is not to "wonder"—as he does—how many drugs would fail to stand up to adequately controlled therapeutic tests but for him and his fellow pharmacologists to make such tests This applies in particular to the few examples he quotes from the NWF If there is any doubt about the value of ammon carb to diminish the unpleasant taste of cascara why not try it out ? Even if creosote is not excreted in the sputum after oral administration it may still have a therapeutic effect Search of the literature may give information or investigations should be made I am surprised to find that Dr Keele could be in any doubt about the use of mist strych et ferri It surely is a tonic The codeine in tab codeinæ co has an analgesic effect , to what extent it is responsible for the total analgesic effect is a problem for pharmacologists I am wholeheartedly in agreement that the formulary should include only drugs that give convincing positive evidence of their worthiness, but any drug that gives therapeutic results should qualify for inclusion I fail to see any distinction between pharmacological and psychological action a psychological action clearly is a pharmacological action It is the aim of such a formulary to include prescriptions that are needed, using the limited range of drugs available It is up to the pharmacologists to teach clinical students what they believe to be rational therapy, and I trust they are not forced to discuss and recommend the use of drugs against their better judgment

Pinner H W TOMSKI

THE MILK FACTOR IN CANCER

SIR,—The annotation on Bittner and his forerunners in your issue of July 25 prompts me to call attention to the fact that the milk factor in the transmission of disease to sucklings has exercised the minds of philosophers from very early times The matter is discussed in Burton's "Anatomy of Melancholy," first published in 1621 The discussion naturally includes statements and records which might not bear critical investigation, but the following extracts are interesting and significant in view of the present-day scientific proof of a milk factor in the transmission of cancer in mice

> Aulus Gellius (a second century Latin author) brings in Phavorinus, that eloquent philosopher, proving this at large, "that there is the same virtue and property in the milk as in the seed, and not in man alone, but in all other creatures " Giraldus (the literary name of the twelfth century historian and ecclesiastic, Girald de Barri) came to the conclusion "that men and beasts participate of her nature and conditions by whose milk they are fed "

Portland Place, W 1 ALFRED WEBB-JOHNSON

DIFFERENTIAL DIAGNOSIS OF DYSPEPSIA

SIR,—Sir Arthur Hurst and Major Venables misquote us in saying that we regard gastritis as the cause of severe symptoms Certainly our conception of this condition appears to be different from theirs, but we went so far as to say that the symptoms were not so severe as those of peptic ulcer although, because of the lack of remissions and the intolerance of dietetic indiscretion, they tend to assume a greater significance We maintain that symptoms in any organic disease can be materially affected by psychotherapy and suggestion, but Hurst's success in the symptomatic relief of his gastritis patients is no proof that the symptoms were those of an anxiety state

With regard to other therapy, we have not been impressed by the results of simple diet and gastric lavage, having obtained maximal symptomatic and gastroscopic improvement only after adherence to the strictest dietetic regime with hourly feeding over a period of several weeks We have been through our cases again and find that the duration of symptoms after the commencement of strict treatment is just twice as long for gastritis as for uncomplicated peptic ulcer Cases of gastritis which were discharged before symptomatic relief was obtained are excluded from this estimate , if they could have been included, the comparison would have been more striking At least half the soldiers with chronic bronchitis state that they have no cough, but on close questioning admit to a cough which they consider normal Similarly many men with gastritis regard their "indigestion" as normal , the same is true even of some men with ulcer In our opinion gastritis is paralleled rather by chronic bronchitis than by effort syndrone and although a proportion of men with gastritis are symptomless because of their extraverted mentality, the symptoms complained of by the more introverted type are, nevertheless, primarily caused by their gastritis

The radiological diagnosis of duodenitis, using Berg's technique, is founded on much more definite changes than is the case with gastritis However, the crux of Sir Arthur Hurst's criticism is the absence of pathological confirmation , *in fact many workers, including* Kirklin, Nagel, Rivers, MacCarty and Wellbrook (to quote only references in English) have proved the diagnosis pathologically and have shown that superficial erosions and even massive hæmorrhages occur in duodenitis In our series, for every five correct clinical diagnoses of duodenal ulcer, one was diagnosed as duodenitis yet, of the duodenitis cases, for every one diagnosed wrongly as ulcer, four were clinically diagnosed correctly We consider this degree of clinical accuracy significant

A MORTON GILL, R ARDEN JONES
An EMS Hospital F R BERRIDGE

DOSAGE OF LOCAL ANÆSTHETICS

SIR,—The most instructive article by Dr Organe in your issue of July 11 prompts me to plead that drugs used for regional anæsthesia should be kept in powder form, contained in sterile ampoules The powder (which has been accurately weighed by the maker) when dissolved in the appropriate amount of sterile normal saline (or CSF for subarachnoid block) gives a fresh, active anæsthetic solution of known strength and uniform reliability Ready-made solutions tend to deteriorate on keeping, or may undergo a change in concentration, such as Dr Organe describes in his first case where evaporation had increased the strength of the solution The anæsthetist can never be sure how efficiently a ready made solution has been prepared, and it is he who i responsible should any ill effects occur I have never regretted adopting the method of preparing solutions which Labat many years ago advocated in his cla ic work

Twickenham NORMAN R JAME

REACTIONS TO THE REPORT

SIR,—The demands on the personnel of our profession are more severe now than ever before and may well be harsher still Many of us are hard put to it to keep things going while our colleagues are away Under these circumstances, it is fantastic that members of the profession, some of whom were not specifically elected for the purpose, should be spending part of their time devising a scheme for a post-war world that no man can even visualise We are an amazing people Why all this urgency to produce a plan ? Is it as many think because there is a certain group in medicine determined to introduce some form of state medical service at the earliest possible moment ?

The majority scheme put forward would introduce so many changes in medical practice, as we know it at present, that it is frankly revolutionary Revolution of any kind are not popular in this country, especially when they are being pressed by the few upon the many It is wrong to state, as a correspondent does in your issue of July 4, that "The majority of the public is only too aware of the many shortcomings of the medical services available to it" This is merely an assertion with nothing to support it He accuses the profession of having "failed to give an intelligent lead to the public," and concludes by saying "This is our moment , let us have vision beyond tomorrow and build worthily for the future" That is a sad mixture of defeatism, emotionalism, and inaccuracy

During the last few years it has been a favourite hobby of some, especially our left-win tellectuals, to

Lord Dawson said that although we were rightly concerned with the increase of tuberculosis in this war, it was important to keep our sense of proportion The total increase in mortality from tuberculosis since the war amounted to 13% in Great Britain A more anxious feature was the selective character of the infection among different classes As in the last war, there was a tendency for an increase of infection among young women, but in this war there had been a novelty in the extension of the infection among young children, particularly in the incidence of tuberculous meningitis, from which there had been increased mortality of 50% But on the whole he believed tuberculosis was under control, and though 13% was a considerable figure there was no sign so far of the disease running away with us Even in the peak year of 1938 there were nearly 250,000 people being looked after in tuberculosis dispensaries Tuberculosis was a germ disease which did not come in waves It was always with us, and its root was in almost every country It was at once curable and at the same time very destructive It could destroy life in a few weeks, but most cases were so mild that the patients were not even aware that they had been attacked In a country like ours, where a large proportion of the cattle were tuberculous, it would be wise to pasteurise our milk The medical profession had been pleading for years with successive Governments to make pasteurisation compulsory But prewar Governments had been stiff-necked and pasteurisation was patchy—not so good in the country as in London and some of the larger centres Lord Dawson suggested that the increase in tuberculosis in children might be partly accounted for by the fact that owing to evacuation so many had consumed raw instead of pasteurised milk Lung tubercle was caused by contact with the expectoration of an established case, and under the overcrowded conditions of war the opportunities of contracting tubercle must be greater than in peace The difficulty of diagnosis of patients with vague symptoms was a matter for watchfulness Mass radiography was making progress, and we were not dependent solely on the United States There were machines in this country which had been standardised according to an agreed pattern, and which would now be turned out in increasing numbers In skilled hands 3000 examinations a week were possible He thought we could do far better in this country by persuasion than by compulsion, that mass radiography would be received with increasing favour as people got to understand it But it must grow *into* our system of medicine discreetly and to dispatch machines all over the country without proper teams to work them would make a bad beginning Lord Dawson was doubtful about the education of the public by cinema it was difficult to give information about health without causing alarm Workers might swing from indifference to over-anxiety, and he himself almost preferred indifference The rehabilitation of the tuberculous patient had not been sufficiently provided for in the past but he believed that the Ministry proposed to consider seriously the maintenance and subsidising of tuberculous patients from the time they leave the sanatorium till they return to full employment In England the care of the tuberculous was primarily the duty of the local authority, but Lord Dawson thought that the emergency medical service might appropriately provide on a larger scale for tuberculous people If it were made clear that there was no more risk of a nurse catching disease in a sanatorium than in an ordinary hospital—in fact rather less, if anything—and if in some way the tuberculous patient could be made part of a nurse's duties—she might for example be seconded from medical or surgical wards to tuberculosis wards—he believed that the nursing difficulty could to a large extent be overcome But he was sure that any attempt to compel nurses to take up any particular phase of nursing would end in failure

Lord Snell replying, said that we must remember that the shortage of nurses and domestics is only one phase of the Government's problem to make the *best use of* woman-power Though the position was unsatisfactory it is slightly better than a year ago Over 90,000 nurses were now working in civilian hospitals—8000 more than a year ago It was estimated that another 12,000 nurses were required There were 2000 nurses employed at sanatoria and another 600 were required and a further 600 for tuberculosis beds in other hospitals He admitted that the percentage deficiency was therefore higher in sanatoria than in general hospitals and that experience showed that tuberculosis nursing was not so attractive as other services The Government was reluctant to adopt compulsion for nurses, but Lord Snell said that in the last resort they might have to consider a wider exercise of powers of direction The decision not to allocate nursing auxiliaries under 21 years of age to sanatoria even if they volunteered had been taken by the Minister on medical advice that this age-group might be particularly liable to infection A proposal had been put before the Standing Advisory Committee on Tuberculosis by one of its own members that the Ministry should be asked to withdraw the embargo The committee felt unable to agree to this but had suggested young nurses might be allowed to serve in institutions dealing with non-pulmonary tuberculosis This recommendation was adopted in Circular 2526 The Government had lately reconsidered the matter and they felt that perhaps in present circumstances nursing auxiliaries under 21 might be allowed to serve in sanatoria if they volunteered provided that the fullest precautions were observed in looking after their health

Summing up, he said we must not forget the improvement in the general health of the community which someone had impishly suggested might be due to the call-up of 10 000 doctors but Lord Snell felt that we should defer criticism of the doctor until he had been provided with the social conditions to make his work effective The Minister of Health shared in the anxiety felt at the new encroachment of tuberculosis and he would continue to take every means open to him to get staff deficiencies remedied and the needs of an essential service fully met

QUESTION TIME

Quality of the National Loaf

Sir E Graham Little asked the Parliamentary Secretary to the Ministry of Food whether his attention had been drawn to the experiments conducted by three scientists of the Children's Nutrition Council of Cambridge, in which they examined 17 samples of national bread obtained from widely different sources, in 7 of which the Ministry's specification with regard to the maximum fibre content was not complied with.—Mr. W Mabane replied These experiments were made on flours milled before national flour became compulsory and confirm to a large extent the results of the larger survey carried out on similar flours by the Research Association of British Flour Millers on behalf of my department The difficulties connected with the standardisation of so small a part of a miller's production were removed when national flour became compulsory and this report recognises the improved quality of national flour since its compulsory introduction.

In reply to a further question Mr Mabane said that in the two weeks ending on July 11, the average production of wheat-germ by controlled millers was at the rate of 19 tons per week

Sale of Tuberculin-tested Cows

Mr David Adams asked the Minister of Agriculture whether he was aware that it is common for cows which react to test for tuberculosis to be sent to market and sold as healthy cows, thereby spreading the disease, and whether prompt steps would be taken to prevent this practice —Mr R S Hudson replied The sale of cows reacting to the tuberculin test is not, on that account, restricted In view of the very much larger number of untested cattle which, if tested, would react, no such restriction would serve any useful purposes —Mr Adams Is the Minister aware that many cows seriously affected with tuberculosis are permitted to be put on the market and disposed as healthy cows? Is that satisfactory? Mr Hudson That is merely repeating the question which I have answered

Scientific Coöperation with Russia

Mr R K Law, in answer to a question, stated that some fifty inquiries from British men of science and scientific *institutions* have already been forwarded through the British Council to Soviet scientific institutions in the last eight months Exchange of information has been encouraged by the formation by the council and Ministry of Information of a joint advisory committee of British men of science whose chairman is Sir John Russell of the Ministry, and vice-chairman and secretary officials of the council injections of tropacocaine into the spinal canal, the idea was to relax the abdominal muscles and cause a fall of blood-pressure As in Ruscoe Clarke's experience, the renal state was rapidly righted The same result one may reasonably suppose would happen in cases of renal failure developing in air-raid casualties The result in my case was magical, and when the man was seen last year he was still fit

Rugby R H PARAMORE

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M P

"FEW things have such an important bearing on morale as food," said Mr Mabane, who has taken over the duties of Parliamentary secretary to the Ministry of Food from Major Lloyd George, and Mr Hudson, as Minister of Agriculture was able to give such a good report of production that our food is assured The whole of Mr Hudson's speech, which took about half an hour, was packed with facts and straight-punching statements But he made a second speech of five words only when Mr Owen Evans of Cardigan said that we were producing more than half the food-supplies of the country in the interjection "It is nearly two-thirds" With our present food production, our existing stores of imported foods, our reserves of meat on the hoof and the increase of agriculturally self-sufficient people to over two million we could live well, but with a reduced meat ration, if we imported practically nothing at all until next harvest This change from an agriculture dependent on imported feeding-stuffs for its sheep cattle and horses, and a human population dependent for a very large part of its bread, butter, eggs, meat and fruit on imports to what is a self-sufficient agriculture is a revolution which deserves even higher praise than the House gave in the debate

Well might Colonel Walter Elliot, himself minister of agriculture in the past, say that the Minister's statement pointed out "the shape of things to come" The Ministry of Food should continue after the war and food subsidy should be an integral part of our agricultural administration Food subsidy at present, Mr George Barnes told us, costs 125 millions a year But private out-of-date marketing arrangements cost us 1500 millions a year, according to Mr Evelyn Walkden, who has made himself an authority on this subject The prospect opens up of nationalised food marketing with continuance of food subsidies to agriculture still further reducing the cost of food And in this war food is cheaper than in the war of 1914–18

Mr Hudson told us how these results had been obtained on the one hand by a scientific direction of agriculture, on the other by a complete state control through the county agricultural committees of the use of land This year there is to be in England and Wales an increase of tillage by 500,000 acres, mostly wheat, so that by next year we shall have 600,000 more acres under wheat But with this there is a great increase in milk production and every farmer is asked to keep the maximum head of stock he can feed with his own resources There is complete state control and the power of direction of farming to any extent required, but Mr Hudson's policy is to work by getting the active cooperation and interest of the farmers, and he succeeds by making personal visits to all parts of the country, and by insisting on the recognition of the individuality of the farm, even of the field, and by decentralisation of administration Perhaps the most striking aspect of Mr Hudson's policy is his reliance upon and usage of scientific research The Agricultural Research Council is the active instrument employed "to obtain the maximum possible knowledge and relate it to the needs of agriculture" The Agricultural Improvement Council, set up last year, has the duty to "get the results of research adopted and utilised more quickly in farming practice" In order to avoid overlapping of these two bodies the Minister has appointed a certain number of members of each body to be members of the other And in addition there are frequent meetings of the two secretariats The work of the Agricultural Improvement Council is decentralised, to the limit, practical demonstrations are arranged "not merely on two or three farms in a county belonging to a farm institute but on many average farms, right down to farms in individual parishes" The results of the first year's experience of the working of this organisation of science and applied science is the assurance of the marriage of research and practice "We are today," Mr Hudson claimed "making the maximum possible use of all the scientific agricultural knowledge that we can possibly lay our hands on" The Minister, however, is no mere utilitarian and he took pride not only in the increase of food production but in that mixed farming which, with its waving fields of crops of infinitely great variety of colour, had made the countryside so beautiful

The debate was certainly on a high level but did not come up to the imaginative and farseeing level of the Minister's statement Colonel Elliot protested against any return to the "wheat mining and wheat quarrying" that has gone on in Canada and the U S A and other countries of the New World and which in the name of cheap food has destroyed English agriculture and produced the dust bowl of the Ohio valley Flight Lieutenant Boothby tried to sell the oats of Aberdeen to the Ministry of Food—apparently quite willing buyers Some members talked of the waste of potatoes—that is the part of the insurance reserve not used this year—and Mr Mabane was able to say that this amounted to only 2 days' supply for human consumption A suggestion was also made about incorporating oats in bread There are possibilities of this, but they are limited, and if we are to add rye and potatoes (we did use potatoes in the last war) bread will be a very motley compound

With the minds of all members gravely concerned about the war situation in Russia and the possibility of relief to this threat to the Allied lines by opening a second front, this food debate was a relief In one vital and fundamental matter—namely, food-supply—a second front based on these islands, and the production front in these islands, is secure

FROM THE PRESS GALLERY

Tuberculosis in War-time

IN the House of Lords on July 28 Lord DAVIES drew attention to the failure of the Ministry of Health to deal with the staffing requirements of institutions for the treatment of tuberculosis Since the war there had fortunately been no great increase in the number of cases but the number of deaths instead of continuing to fall had increased from 26,176 in 1938 to 28,669 in 1941 There were unfortunately many people awaiting institutional treatment—1507 in England, 400 in Wales and 652 in Scotland This figure did not include ex-Service patients and in Wales there were a further 130 ex-Service men on the waiting-list He appealed to the Ministry to increase the facilities for these people to use empty beds in the emergency hospitals and, above all, to help institutions to keep open the beds they had He thought the Government should withdraw Circular 2340, which, he alleged, aggravated the shortage of nurses It gave women the choice of the type of institution in which they would serve and by refusing to allow girls of under 21 to volunteer for service in tuberculosis hospitals suggested that the risk of infection was greater there than in general hospitals When men were being sent to fight Lord Davies thought women should be sent where their services were most needed and he asked that the Ministry of Labour should include nurses and hospital domestic staffs in the categories of essential or vital war work He also urged that the proceedings of the Rushcliffe Committee should be expedited, and that the manufacture of instruments for mass radiology should be speeded-up

Lord CORK and ORRERY suggested that it would ease the situation if the General Nursing Council would introduce three months in a sanatorium into the training of nurses and this would be an advantage educationally Lord HUNTINGDON understood that 20% of the country's general practitioners had been called up by January, 1941, and since then another 1400 had been taken Could army doctors not help overworked general practitioners? He pleaded for the compilation of a tuberculosis register by the General Nursing Council, similar to those for fever and mental nurses

FRACTURES OF THE OS CALCIS

A. S BLUNDELL BANKART
M CHIR CAMB , F R C S
ORTHOPÆDIC SURGEON TO THE MIDDLESEX HOSPITAL

THE results of the treatment of crush fractures of the os calcis are rotten. They bear no relation to the accuracy with which the fractures are reduced With few exceptions the result of Böhler's method of reduction and fixation in plaster is a permanently stiff and painful foot on which no man can do a day's work or indulge in any form of sport or exercise The reason for this is clear Any severe injury of a foot, even a bad sprain, which is immobilised in plaster for four months will result in a stiff and painful foot ; the movements of inversion and eversion will be limited or abolished, and, since these movements are required for normal use of the foot, walking will be difficult and painful especially on uneven ground And when to this is added the trauma of a fracture involving the subastragaloid joint, traumatic arthritis follows and completes the crippling of the patient. So it often happens that after a year or more of continuous disability the patient is advised to have a subastragaloid arthrodesis

The immediate results of treatment by rest in bed with massage and movements from the start are very much better than those of reduction and plaster. In many cases fairly good subastragaloid movements are preserved and the patient is able to walk with comparatively little discomfort But sooner or later traumatic arthritis follows and the foot becomes stiff and painful

The results of subastragaloid arthrodesis for fractures of the os calcis are often unsatisfactory, because (1) the operation is incomplete and the mediotarsal joints remain stiff and painful ; (2) the foot is flat and ill-adapted for heel and toe walking ; (3) after many months the patient has become accustomed to a stiff and painful foot

It would seem that the best result that can be obtained from a fracture of the os calcis involving the subastragaloid joint is a completely stiff, but painless, foot of a good shape and with free movements at the ankle-joint, and I suggest that a complete triple arthrodesis should be done at once as a primary measure in such cases This operation gives good functional results in paralytic, congenital and other deformities of the foot, and there is no obvious reason why it should not give equally good results in fractures of the os calcis

In performing triple arthrodesis for recent fracture of the os calcis a slight modification of the usual procedure will be found useful In these cases it is difficult to dislocate the foot inwards at the subastragaloid joint, because the bone is apt to come to pieces during the manipulation A short longitudinal incision is therefore made first on the inner side of the foot over the scaphoid Through this incision the scaphoid is excised and the cartilage is removed from the head of the astragalus and the bases of the cuneiform bones This incision is then closed The usual incision is then made on the outer side of the foot, and the calcaneocuboid joint is at once excised The subastragaloid joint is now opened and dislocation of the os calcis is easy, because the bone is free from its anterior connexions

The articular surfaces are removed piecemeal and the fragments of the os calcis are manipulated so as to restore the normal prominence of the heel Finally the foot is displaced backwards and the operation is completed in the usual way. The foot is kept in plaster for four months, during which time the patient may get about on crutches but is not allowed to put weight on the limb

As yet only two of our cases have completed the treatment and are walking without plaster, but both of these have active painless feet and they compare most favourably with any cases that I have seen treated by other methods

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INCIDENCE OF NEUROSIS IN ENGLAND UNDER WAR CONDITIONS*

AUBREY LEWIS, M D ADELAIDE, F R.C P
CLINICAL DIRECTOR AND LECTURER IN PSYCHIATRY TO THE MAUDSLEY HOSPITAL

IT is not easy to decide whether a mental disturbance—neurotic or otherwise—is directly attributable to war conditions, and particularly to air-raids It is therefore more informative to find out whether there is more, or less, neurosis altogether since the war, or since the intensive air-raids, than to count up the cases that seem to have been caused by the war The latter criterion, however, is sometimes used If the number of civilian patients admitted to special EMS neurosis units all over the country be taken as the measure then there were not more than 300 such cases in the nine months, October, 1940, to June, 1941 The total number admitted in England and Wales during that period was 291, of whom 42 were admitted in May, 1941, and 94 in June, 1941. The apparent increase in the summer of 1941 was due to an influx of persons referred to the neurosis centres not necessarily because they needed inpatient treatment but in accordance with a newly instituted policy whereby all persons receiving an injury allowance for "shock" or similar neurotic reactions were required to enter hospital for an expert opinion on the cause of their illness, and for treatment ; many of the latest admissions represented cases of unnecessarily long-continued payments

The Ministry of Pensions has to deal with "shock originating from direct exposure to bomb explosion or blast"—a loose term covering neurotic reactions, as well as suspected but not verified physical injury from blast, and states of fatigue and exhaustion. In the first few months of the intensive raids from September, 1940, about 100 people a night were admitted to first-aid posts (a third men, two-thirds women), and roughly 18–20% of these were classified as "shock without physical injury" only about 10% of these people were admitted to hospital, and then perhaps only until the following morning During the same period the Ministry were giving injury allowances for the effects of "shock originating from direct exposure to bomb explosion or blast" to about 100 persons a week , and roughly about 5% of those receiving injury allowances were cases purely of "shock" as thus defined These figures, however, are approximate and have, of course, changed from time to time The average period of incapacity for those on allowances for "shock" was about five weeks This would not necessarily cover the period during which symptoms were incapacitating, nor imply that the disability was directly attributable to the bombing , the fallacies are much the same as those familiar in industrial compensation for injury

It can be urged that those who claim benefit for "shock" may not be as numerous as those who might but do not , and that only those who have been in the near vicinity of a bomb explosion are likely to come under the notice of the Ministry of Pensions, yet neurosis attributable to war conditions might occur in others less dramatically exposed to stress Because of this, and because it is difficult to determine whether a patient's neurotic illness is due to the war or not, the following data have been obtained from a doctor in general practice in London whose qualifications and careful records make his information peculiarly trustworthy. They show the variations that have occurred in the incidence of neurotic illness since the war

A LONDON GENERAL PRACTICE

The doctor had about 3000 private patients on his books , they were of the (chiefly lower) middle class, and can be taken as a fair sample of the people of the district, except that the proportion of women to men was unduly high (2 1) owing to the inclusion of the wives of panel patients (i e , of men earning and living on a weekly wage of not more than £5, and who were therefore entitled to National Health Insurance benefit though their wives were not) The number of patients of all kinds seen by this doctor between September, 1940, and May, 1941, was 740 ; the comparable figure for 1937 (January to May, September to December) was 970 , 1937 was selected as the last year free from threats and rumours of war This falling off would correspond to the fact that many women and children had been evacuated, and men had joined the Services Thus 115 children were seen in 1940–41, as against 174 for the corresponding period of 1937

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* Report prepared at the request of the Medical Research Council.

Notes and News

University of Oxford

In congregations held on July 18 and 25, the following degrees were conferred

DM—J M L Burtenshaw

MCh—A H Hunt and R H Gardiner

BM, BCh—M H M Gilbertson, J F D Frazer, D S Parsons, J L Boldero, J D Little, R F B Bennett, Q J G Hobson, W D M Paton, W A Briscoe, H G Farquhar, J D Green, J Pinching, K W Lovel, S L H Smith, *J M Jefferson, *H J C J L'Etang R H Scott, R Bryce Smith, P J Crerar, D M Hamilton, R Powell, D A McDonald, N G D Campbell, R H Jackson, A K Tyler, A M M Wilson E Shephard, W B Armstrong, E L H Jones, G A Neligan O P Silver, J J W O H Tobin, Constance M Ormrod, *and M R Mullins

* In absence

University of Cambridge

At recent examinations the following were successful

DMRE

Part I—Olga Bauerova Phyllis Burvill Holmes, Francis Freund, Benzion Kounine, Arnost Preiss, and Ernst Rachwalsky

Part II—G K F Cohen, R M Crichton Timothy Culloty, Francis Freund Maria E Grossman, H T Halper, H R C Hay, C J C G Hodson D A Jennings M B Leitch J M Mennell, D J Mitchell, R G Moffat, J Y Rabinowitch, Katharina Rosenkranz, A W Simmins, J H Smitham, and Lilian H Walter

University of London

Mr B W Windeyer has been appointed to the new chair of radiology at Middlesex Hospital medical school (see the *Lancet*, 1942, i, 508)

Mr Windeyer graduated from the University of Sydney in 1927, obtaining the Edinburgh surgical fellowship three years later He took the DMRE in 1934 and was elected to the fellowship of the Faculty of Radiologists in 1940 He has been on the staff of the Middlesex Hospital since 1931, and in 1937 was appointed medical officer in charge of the Meyerstein Institute of Radiotherapy His published work includes papers on the use of radiotherapy in urology and in non malignant uterine hæmorrhage

Mr F G Young, DSc, a member of the scientific staff of the Medical Research Council, has been appointed to the chair of biochemistry at St Thomas's Hospital medical school, and Mr Alexander Lawson, PhD, lecturer in chemistry at University College, Southampton, has been appointed to the readership in organic chemistry at the London (R F H) School of Medicine for Women

Scottish Conjoint Board

At recent examinations of the board of the Royal Colleges of Physicians and Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow the following were successful

LRCP & SE, LRFP & S

G E Barnard, K H Bayatti, W L Bilsland, William Brydone, B H Budoff, R S David A R N Dhanji, Jess Diamond, E S M Douglas M R El Sairaff, A H Esmat, M S A El Hamid, C C Haupt, El S A K Himmat, P S Huck C L Isitt, H E Katz, Ian McKechnie, Robert Mitchell, L E Mosscrop, M A Motagalli, A C Muir, J A Murdoch, J A M'Ratcliffe, Harold Rosenberg, Albert Schmookler, Monroe Schneider, J S Seaton, S P Selvadurai, J K K Stielau Bernard Stillerman, Seymour Tenzer, I A M Thomson, Ramapillai Vannithamby, Harry Walker and Isidor Wolff

Manfred Gross, MD Berlin, as graduate of a recognised foreign university, was also admitted a licentiate

Royal College of Surgeons of Edinburgh

At a meeting of the college on July 23, with Mr J W Struthers, the president, in the chair, the diploma of honorary fellowship was presented to Lieut General Alexander Hood, DG AMS, and to Prof A T Jurasz, dean of the Polish Medical Faculty of the University of Edinburgh The following were admitted to the fellowship

George Bankoff, MD Florence, Hassan Din MB Punjab, T J Evans, MB Lond, Dora J B Falconer, MRCS, A P Gracie, MB Edin, J D Hallissy MB NUI, A W Kay, MB Glasg, G R Nicks MB NZ D L Savill, MB Ldin, J A E Watts, MRCS, and E B Wild, MRCS

Glasgow Smallpox Epidemic

Up to July 10 there were 39 confirmed cases of smallpox in Glasgow, including 10 cases from the ship There were no further cases until July 20 when one was discovered in a mental hospital On July 21 a Glasgow girl, holidaying in London, was admitted to hospital there as a case of smallpox On July 24 a further case was diagnosed in Argyllshire There have been 7 deaths among these 42 patients

Royal Medical Benevolent Fund

At a quarterly council meeting on July 28 Sir Arnold Lawson, who was re elected chairman, said that his personal letter sent out with the report had got in more subscribers and increased the number paying by banker's order Several new legacies were announced Figures submitted by the secretary showed that the total book value of investments, the amount of money distributed annually, the subscription income, and the dividend income, had all been doubled during the last 15 years During the same period the working expenses had only gone up from £1428 in 1927 to £1617 in 1941 The case committee reported the growing difficulties of beneficiaries in these days of higher living expenses The unwritten rule to give no grant to anyone with an income of over £100 may have to be relaxed The secretary would impress expectant testators with the need for accurate terminology, their bequests are *frequently so worded as to make it* difficult to decide to what body the legacy was left The ambiguity may sometimes nullify the legacy It was decided that in future new applicants need not obtain the supporting signature of a subscriber, the recommendation of any medical practitioner will be enough

More Approved Names for Drugs

The General Medical Council has approved names for three more substances now being produced, or likely shortly to be produced, by British manufacturers

Approved names	*Previous names*
Dienœstrol	Di *p* hydroxyphenylhexadiene
Pheniodol	Biliselectan
Ethisterone	Ethinyltestosterone Lutocyclin Lutogyl Pregneninolone Progestoral Proluton C

The question of including these substances in the British Pharmacopœia is under consideration

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A new Portugese medical journal called *Amatus Lusitanus* is designed to carry on the tradition of Portuguese medicine set by Amato Lusitano, a worthy contemporary of Andreas Vesalius and Ambroise Paré The first issue contains a well illustrated article on the structure and functions of the hypophysis by A C da Costa, a study by J Cutileiro of the types of pneumococci found in 69 cases of lobar pneumonia and the relation between the type of infection and the symptoms and prognosis, a lecture on malaria by F J C Cambournac, and a report of a case of acute pemphigus by J Esteves The general standard is high An English summary of each article would increase the value of the journal to most English readers, only one article in the first number has such a summary

ERRATUM—In the letter on "Dangers of Dulcin" (p 141 of our last issue, 11th line from end), for rapidly read *sapidly*

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

Births, Marriages and Deaths

BIRTHS

CURRAN—On July 21, at Wolverhampton, the wife of Dr T P Curran, of Stafford—a daughter

ELLIS JONES—On July 27 at Woking, the wife of Surgeon Lieutenant E Ellis Jones RNVR—a daughter

JOHNSTON—On Aug 1, in London the wife of Dr Colin McKe Johnston, BDS—a son

RUSSELL—On July 24 at Oxford the wife of Major W Ritch Russell, RAMC, of Edinburgh—a daughter

MARRIAGES

MILNE—MCKENDRICK—On July 25 at Beaconsfield, Frank Milne to Margaret Elizabeth McKendrick, MRCS

DEATHS

ASTON—On July 29, at Seaview, Isle of Wight, Richard Norm n Aston, MRCS

BUCKHAM—On July 31, at Hereford, Frederick Buckham, LRCP, formerly of Cardiff, aged 94

DREWITT—On July 29 in London, Frederic George Dawtrey Drewitt MD OXFD, FRCP, aged 94

FRASER—On July 27, at Caistor, Lincolnshire, Alexander Fraser, MB EDIN JP

NEISH—On July 27 at Tunbridge Wells, William Alexander Neish, MB GLASG

TALLACK—On Aug 1, John Reginald Arthur Tallack, MB LPOOL, of Grays, Essex, aged 40 develops or is aggravated during the war, war stress had not been responsible for this in a quarter of the previously healthy, and in a fifth of those with previous neurotic history Moreover, recovery or great improvement is the rule in those who were not already neurotic before the war

It is interesting to see whether the months during which London was heavily bombed showed a heavier incidence of neurosis Fig 1 (based on financial returns which have been found to correspond closely to attendances) shows that between September, 1939, and September, 1940, the number of patients who attended showed much the same rise and fall as in previous years, except for slight deviations attributable to the first evacuation from London in the early months of the war, and a smaller exodus at the time France capitulated From September, 1940, however, the curve is quite different, and shows that there was either very much less illness than might be normally expected, in the autumn and early winter of 1940, or—obviously the more appropriate explanation—that the population of the district was declining It follows that a comparison of the absolute figures of neurosis for the months between September, 1940, and May, 1941, with each other, or with those of the corresponding months of previous years, would be misleading, and that any month by month fluctuations in the amount of neurosis could best be recognised by a monthly fluctuation in the proportion of neurotic to physical illnesses seen On such a basis it would seem that the percentage of neurosis was higher in the months September, October, November, 1940 (figs 2 and 3)

MERSEYSIDE

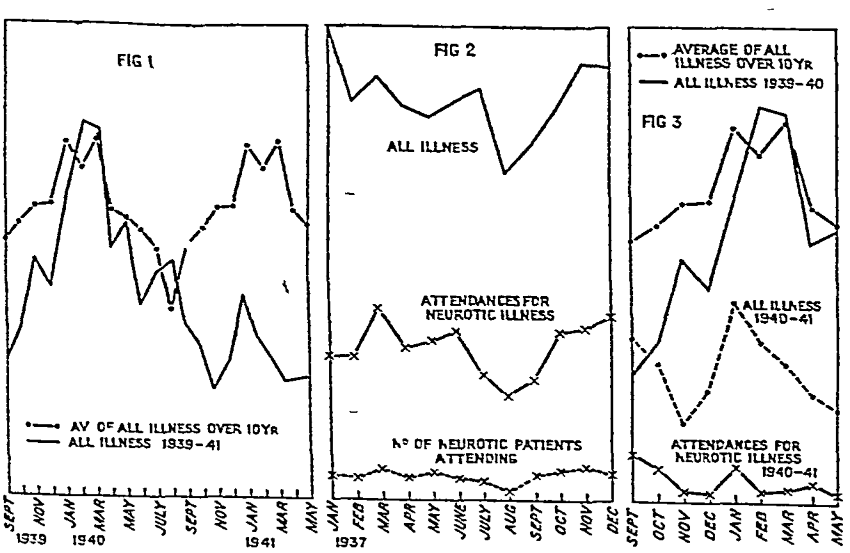
Data have been obtained, particularly about Liverpool, from the professor of medicine (who is physician at the Royal Infirmary), three psychiatrists in charge of outpatient clinics in Liverpool and six general practitioners (three in Liverpool, Birkenhead and Wallasey—bombed areas—and three in reception areas to which Merseyside people betook themselves after the raids) Their evidence is not discrepant The Liverpool doctors—psychiatrists and others—state that they have not observed any increase in the incidence of psychoneuroses as a result of war, and the doctors in reception areas say they have seen “very few who show nervous disturbances, or more than the usual anxiety which we all feel these days” , “no evidence of any numerical increase—a few who were abnormally nervous people before were somewhat worse”

TABLE III—DATA FROM THE SAME GENERAL PRACTICE FOR 1937

Patients seen in 1937	No.	Av age (yrs)	Children 14 or under	Av age excluding children	Per cent of same sex	Per cent of total illness
Female—						
For physical illness only	575	37	125	45	69	46
For nervous symptoms	146	47	4	48	17 } 31	12 } 21
For neurosis	115	41	4	43	14	9
	836		133			67
Male—						
For physical illness only	332	32	107	45	83	27
For nervous symptoms	34	40	2	43	8 } 17	3 } 6
For neurosis	35	35	0	35	9	3
	401		109			33
Total	1237		240			

Of total number	67% female, 33% male
Of the females	69% physical illness 17% nervous symptoms 14% neurosis (31% nervous illness)
Of the males	83% physical illness, 8% nervous symptoms, 9% neurosis (17% nervous illness)
Of the total	73% physical illness 15% nervous symptoms 12% neurosis (27% nervous illness)
Of physical illness	63% female, 37% male
Of nervous illness	40% nervous symptoms in female 35% neurosis in female (75% female) 12% nervous symptoms in male 13% neurosis in male (25% male), i e, 52% nervous symptoms, 48% neurosis

However, one practitioner (in Llandudno) reported having seen many cases of “mental fatigue and nervousness which soon improved in our more fortunate surroundings The patients in particular with a high blood-pressure and the associated nervous make-up suffered badly but again responded well to rest and treatment My partner bears out what I have said, and we might add that we not only have to deal here with evacuees from Liverpool but are also in charge of two large working-class convalescent homes for the Birmingham districts, which would be expected to bring to our notice a disproportionately higher number of cases of psychoneurosis, if they existed Among these patients also, one does not seem to find a higher proportion of such psychoneurotic patients than prior to the war” And another in Rhyl says · “except for the initial shock and a purely temporary phase for a short time afterwards I have not seen neurotic reactions in the large number of people who have come from the large towns where they have been bombed very severely. I have seen a number of anxiety states but they have all been in people who have not been bombed at all (anticipation neurosis)”



Figs 1-3—Experience in a London general practice. Fig. 1 shows the incidence of all illness from September 1939 to May 1941 compared with the previous ten-year averages In fig 2 the numbers of attendances and of patients attending for neurotic illness in 1937 are compared with the attendances for all illness in the same year Fig 3 shows the attendance for neurotic illness and all illness in 1940-41 compared with attendances for all illness in 1939-40 and in the previous ten years

These curves have been computed in part from financial returns and though their vertical scales are comparable it is not possible to express them in figures.

The demeanour of injured persons was described as “patient and stoical I had less trouble here than in an ordinary hospital ward No complaints smiles occasionally mixed with tears, if one inquired about relatives, were usual These patients, having tasted the bitterness of homes gone and injuries sustained were grateful for any attention and had a serenity and calm which might be due to the fact that, having experienced their worst fears and come through, they were content to await the future and not rush to meet it—no evidence here of neurosis, either hysterical or depressive”

One of the psychiatrists (who has an outpatient clinic at the Royal Southern Hospital) mentions that “some of one's old chronic cases seem to be improved in present circumstances” And, while pointing out that the falling off in attendances is partly accounted for by the unwillingness of patients from outlying districts to come into Liverpool, he discredits the view that there are large numbers of war-stress patients who do not get to the psychiatrists, he adds that discussion with his

TABLE I—DATA FROM A LONDON GENERAL PRACTICE IN NINE MONTHS OF WAR

—	—	1940				1941					Total
		Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
Patients attended who had no neurotic illness	Attendances	229	201	136	207	321	294	253	184	169	1994
	No of patients	104	79	65	89	125	113	106	80	79	496
(A) Patients with no previous neurotic illness who developed it	Attendances	33	22	21	10	26	16	17	17	27	189
	No of patients	17	11	10	6	10	8	10	9	11	49
(B) Patients previously seen for neurotic illness or anxious personality whose illness was aggravated (excluding attendances for non neurotic illness)	Attendances	100	86	48	54	78	56	56	61	42	581
	No of patients	49	41	28	25	33	26	23	27	22	102
Chronic neurotics improved or stationary	Attendances	18	20	18	18	30	20	22	19	15	180
	No of patients	12	11	10	11	10	9	11	9	7	48*
Patients seen for neurotic illness not previously known	Attendances	11	7	7	4	7	1	0	6	2	45
	No of patients	5	3	3	4	3	1	0	2	1	15
Total number of patients	Non neurotic	104	79	65	89	125	113	106	80	79	496 } 740
	Neurotic	83	66	51	46	57	44	44	47	41	244 }
—	% Neurotic	44	46	44	34	31	28	29	37	34	33

* Including a number not treated for neurosis but seen for other reasons

Average number of attendances for patients during Sept 1940 to May 1941 non neurotic 4 02, neurotic illness 4 08 (+ other attendances for non neurotic illness)

Patients seen Jan 1940 to Aug 1940 and not seen since (both neurotic and non neurotic)	556
Patients seen Sept 1940 to May 1941	740
	1296
Patients seen 1937–39 and not seen since	1620
Estimated total number of patients (not on panel list)	2916

The number of patients seen for neurotic disturbance, from September, 1940, to May, 1941, was 244—that is, a third of all patients seen had a neurotic illness during the period covered (tables I and II) The average number of attendances was the same for those with neurotic illness as for those physically ill, unless the physical illnesses of neurotics are also reckoned, in which case they have a higher average number of attendances During 1937 the proportion of those neurotically ill had been lower (27% of all patients seen, table III), but a third of all female patients seen were complaining of neurotic disorder, whereas only a fifth of the men did so An increase in the proportion of women seen in 1940–41 would therefore be likely to lead to a higher proportion of neurotic patients The proportion of men to women, however, among all patients seen between September, 1940, and May, 1941, was the same as it had been in 1937, and the proportion of men to women among those with nervous illness was also the same during the two periods in question The rise, therefore, in the proportion of neurotic illness did not depend on a change in the sex ratio

The absolute number of neurotic persons seen in 9 war months (September, 1940, to May, 1941) was the same (between 240 and 250) as it had been for the corresponding period two years before the war, but as the total number of all patients seen had fallen off (from 970 to 740), it appears that there had been a slight rise since the blitz in the amount of neurosis in the available population Of these neurotic patients rather more than half (now, just as in 1937) have a straightforward neurosis, and the remainder have prominent neurotic symptoms masquerading as physical disease or due to physical disease Of the 1940–41 neurotics, 20% had not previously had a neurotic illness, 74% of them were known to have had previous neurotic disturbance, which had been made worse by the war in most cases, in the remaining 6% reliable previous data were not available In two-thirds of the neurotics the conditions had developed, or been aggravated, since the war The prognosis was good in those 49 patients who had hitherto been free from neurotic trouble 34 of them recovered or improved greatly, whereas only 24 recovered or improved greatly out of the 102 who had a previous history of neurosis

As to the part played by actual war stress, including air-raids, there was evidence that this was one of the causes of the illness in three-quarters of the patients who were now having their first neurotic attack, and that it was partly responsible in four-fifths of the patients who had a history of previous neurotic trouble (table II) Air-raids alone had played a causal part in an eighth of the previously neurosis-free and in a sixth of those with previous neurotic history The severity of the neurotic illness was much greater in the "aggravated" group who had a history of previous neurosis than in the others, only 4% of the previously neurosis-free had now got a severe neurosis as contrasted with 20% of the "aggravated" group

From all this it follows that a severe neurosis hardly occurs as a war phenomenon except in people who had been neurotic before the war, and that when neurosis

TABLE II—RESULTS AND EFFECTS OF WAR AND RAIDS IN PATIENTS A AND B OF TABLE I

Previous personality good

Severity	No	Result	No	Factors include			
				War	Raids	Both	Neither
Mild	37	Recovered	10	2	3		5
		Much improved	17	6	2	5	4
		Improved	3	1			2
		I s q	2	2			
		Unknown	5		2	3	
Moderate	10	Recovered	0				
		Much improved	6	3	1	1	1
		Improved	1	1			
		I s q	1	1			
		Unknown	2	1		1	
Severe	2	Recovered	0				
		Much improved	1				
		Improved	0				
		I s q	1	1			
		Unknown	0				
Total	49			18	8	11	12

Raids a factor in 39%, improvement in at least 78%

Previous neurotic history

Severity	No	Result	No	Factors include			
				War	Raids	Both	Neither
Mild	50	Recovered	1				1
		Much improved	17	10	3	2	2
		Improved	11	4	3	3	1
		I s q	16	4	3	9	
		Unknown	5		2	1	2
Moderate	32	Recovered	0				
		Much improved	6	1		2	3
		Improved	10	1		8	1
		I s q	16	4	1	6	5
		Unknown	0				
Severe	20	Recovered	0				
		Much improved	0				
		Improved	3		1	2	
		I s q	16	3	4	5	4
		Unknown	1	1			
Total	102			28	17	38	19

Raids a factor in 54% improvement in at least 47%

actual or potential—were among the first to evacuate Nevertheless it cannot be said that there is evidence of any notable increase in the incidence of neurosis Coventry has suffered many previous raids, and it may be that these served to eliminate the more nervous people by evacuation prior to the big raid "

A psychiatrist confirms the foregoing, in the main (May, 1941)

"The numbers of new cases at the psychiatric outpatient department at the Coventry and Warwickshire Hospital have hardly altered since the air raids began On the average 5 new cases are seen each week Hardly any hyperacute neuroses have been referred either to the department, to the County Mental Hospital or to the Regional Neuro Psychiatric Emergency Hospital During the past few months there has been a trickle of anxiety states and hysterics that could be attributed more or less directly to the air raids These, however, hardly ever appear for a few weeks after the raid in question In the general emergency hospitals to which I am attached as consultant, one sees a few more acute psycho-neurotic conditions, often associated with physical injuries The chief psychiatric problem after a big raid is in coping with early senile cases who become maladjusted, and mental defectives who should years ago have been institutionalised Both these types seem easily to become unstuck when having to live in a shelter My general impression is that the number of neurotic disturbances is considerably higher than we realise, but that the cases just do not get treatment, that is not to say, however, that the majority of them do not make a spontaneous recovery "

MANCHESTER

In Manchester which has had severe, but relatively few, raids there has not been any increase in the number of patients attending psychiatric outpatient clinics, nor according to social workers has there been any demand for psychiatric help among the adult evacuees in the quieter regions around Manchester A previous history of neurosis, or of high-grade mental defect has been found in the patients with neurotic reactions to raids

LONDON

The number of new patients seen at various psychiatric outpatient departments in London was 4330 in 1940, as against 5945 for the same clinics in 1939 These figures cannot be taken at face value since there were many other factors influencing them besides the actual amount of neurotic illness for instance, many of the clinics were working with reduced staff and much reduced hours of attendance They suggest, however, that there was no increase in neurotic illness

Further loose data about the London population indicate that, as was reported from some provincial regions, the reactions to bombing may be delayed Thus in the middle of September hundreds of homeless people from East and West Ham had been moved to rest centres in Essex They were depressed, as a group, and thus contrasted strongly with the cheerful demeanour of those seen in similar rest centres in London itself, to which the people had come immediately after the raid However, these people did not need a doctor's attention Similarly among a large number of London evacuees seen in a Yorkshire reception area after having been bombed out, intolerance and irritability were noticed, in contrast to the usual Cockney good humour and endurance Among 1600 homeless people moved to another area (which was itself in the gun barrage, and where many bombs were dropped) and billeted there, there were 130 who during October, November and December, 1940, came under the notice of a psychiatric social worker as being "nervous", 45 of these 130, however, were under the age of 16, and only one of the 85 adults became a hospital inpatient, 12 attended a psychiatric outpatient clinic (usually only for one interview with the psychiatrist) "In many cases the difficulties of a new environment, separation from other members of the family, and loneliness seemed as important factors as the bombing experiences they had had—minor environmental adaptations and friendly visiting were sufficient to put them right " Most of the cases cleared up well

A special problem in the civilian population is presented by those in the ARP services, and especially in the fire-fighting service (AFS) These men are employed by the local authority, and any with incapacitating nervous symptoms are, in the London area, officially referred to a Maudsley psychiatric clinic for advice The total number of men, among the thousands of London's AFS, who have been referred to various Maudsley outpatient clinics for advice either officially or by their own doctor, was 72 between September, 1940, and May 30, 1941 There are, of course, some among the men who are being treated by their private doctors for neurotic symptoms, but any who have had to stop work on account of their symptoms would be referred to the clinics mentioned A few of the AFS men have been seen, after heavy exposure, suffering from exhaustion comparable to that seen in the soldiers evacuated through Dunkirk, and they show similar rapid recovery after rest, though they may turn out to have had a predisposition to neurosis, and to be henceforward less able to bear the stress of their ARP work

Among those doing the less strenuous and dangerous forms of ARP work (e g, telephonist at a post) instances of improvement on their previous mental health are reported, they have a definite and satisfying job Similarly an investigation made in the spring of 1940 on chronic neurotics attending outpatient clinics showed that a proportion had improved since the war gave them interests previously lacking On the other hand, many persons who had been uneasy and anxious during the first year of the war (when there was no tangible danger but much room for morbid and exaggerated fears) were able to settle when they had experienced the real thing and knew the worst There are no reliable figures showing the extent to which this observation, made by observers in different parts of the country, held good for the neurotic population as a whole

It would be wrong to assume, as some have, that socially undesirable behaviour, especially evasion or timidity in the face of danger and privation, are the only forms of neurotic reaction evident, obsessional neurosis, for example, is seen which does not conflict with social duty and capacity to perform it, many patients with anxiety neurosis are courageous and enduring, and some of those who eventually become incapable of carrying on with their work because of neurosis have long done good service in spite of their symptoms Their illness is incapacitating, like physical disability, if criteria of moral and social responsibility are introduced, they lead to the conclusion that undesirable or blameworthy manifestations of neurosis and psychopathic personality are far less often seen in neurotic civilians than in neurotic soldiers This does not imply a reflection upon the soldiers (who are mostly yesterday's civilians) but is an outcome of the different environmental and emotional causes at work in the two groups Discussion of the causes of neurotic symptoms would be irrelevant here as is also discussion of the forms neurotic illness takes when these war-time causes are operative An account of the types of unhealthy mental reaction seen among the civilian population may be found in various articles (Felix Brown 1941, Harris 1941, Pegge 1940) There is nothing new in these types of reaction, nor in the semistupor described in a few cases as an immediate reaction to bombing

PSYCHOTIC REACTIONS

So far neurotic reactions have been considered The common distinction between neurosis and insanity is, however at bottom so arbitrary and vague, except for legal and administrative purposes, that many cases fall equally well into either category Thus among those committed to observation wards on a relieving officer's order since the war there have been some who would in ordinary times be treated as neurotics in an outpatient department or an ordinary hospital ward

Admissions to observation wards in London, the best provided and organised city in this regard, have varied not only according to the number needing admission but also according to the available accommodation, several large observation wards having been blasted or set on fire The Dulwich observation ward serves a population of approximately 700,000, in a district which has been severely and repeatedly attacked from the air Between September, 1940, and February, 1941, 435 patients were admitted—an increase of 25% on previous figures But probably this does not hospital colleagues in all departments and with general practitioners confirms his opinion, but "of course I am excluding the emotional distress and mental fatigue of short duration, following on severe or prolonged bombing—such states are obviously widespread but do not constitute neuroses" This tallies with the Llandudno doctor's comment above

The two other psychiatrists report that in two first line hospitals, which received respectively 578 and 743 air raid casualties, there were only two instances of "acute mental or nervous distress," and they remark that inquiries about first-aid posts elicited little difference of experience from the above there were instances of "very minor and transient alarm" such as could be dealt with by ARP personnel They too report that continuous and intensive air bombardment has not been followed by any immediate rise in the number of cases referred to psychiatric outpatient clinics As to later effects, they have found that persons known to have been unstable before the air raids "remain relatively unaffected by blitz conditions, their activities and even their responses to treatment pursuing a normal course." These psychiatrists, however, say in general terms anxiety states, mildly depressed conditions, and states of transient confusion and mental exhaustion have been found to follow enemy action, these have been of varying duration, a notable feature has been their incidence among elderly persons, and adolescents Among the cases in civil defence workers the elements of fatigue, extreme mental and physical exhaustion and previous unfamiliarity with gruesome circumstances, as experienced by regular and auxiliary firemen, rescue parties and first aid workers, have naturally been of marked contributory significance Another Liverpool psychiatrist says that he has noticed that half of his patients are worse since the war, a quarter are better, and a quarter unaffected most of those who did not improve were unmarried men of military age

From Liverpool and Birkenhead come such reports as "the commonest neurotic reaction in this area has been one of flight to the safety areas of those that remained the majority are fairly cheerful, and the commonest reactions of which the minority complain are sinking feelings in the epigastrium, insomnia (lying awake listening for sirens), a few cases of diarrhœa at night during the raid and for the following day", "I run a private practice ranging from the better class industrial workers upwards all my patients and friends have stood up to the raids much better than I expected A few, mostly women of middle age, have been upset and found themselves weeping for no reason at all the exhibition of a little bromide has been all that was necessary to cause disappearance of their symptoms I have seen very few people seriously affected but in each case there has been a definite history of mental instability many who have had very unpleasant experiences—loss of home, narrow escapes, loss of relatives, &c —continue to live in the danger zone, and whilst admitting, as do we all, that they do not like the raids, nevertheless face them Many patients of over 70 have stayed put and do not appear to be seriously affected either by fear or loss of sleep"

It is of interest that the doctors in Liverpool trained 18 volunteers as auxiliary mental-health workers for service in and after raids, but none of the 18 has been required there was no such work for them to do

BRISTOL

The staff of the Bristol Child Guidance Clinic made a survey during January, 1941, of people sleeping in a tunnel, housing 2200–3000 persons Fifty families were investigated totalling 172 persons These people were spending twelve or more hours every night in the tunnel, they had only what meals they could bring with them or prepare on the spot, and many, in the unscheduled part of the shelter, were dossing on bedding on the earthen floor

"The striking result of this survey was the very high proportion of individuals suffering from well marked nervous symptoms, generalised fear of air raids was universal and was discounted for the purposes of the investigation The subjects considered nervous were either diagnosed as such by their own doctors or showed well marked symptoms of psychological illness Of all the (family) units investigated 62% included one or more members suffering from psychological illness, 50% of these units included members receiving treatment from doctors, hospitals or clinics for 'nervous' disorders Those persons who stated that they 'had no faith in Anderson shelters' nearly always had psychological signs, and this could almost be taken as a psychological symptom. Damage to the home (58%) or absence of domestic shelter (74%) were aggravating factors In spite of considerable hardships involved in travelling long distances to the tunnel, difficulties in preparing food, and unsatisfactory sleeping accommodation, *the great majority of these nervous subjects have improved in health since they have spent their nights in the tunnel*" The psychiatrist points out that "the determining causes of this troglodyte life act on the family as a whole, whether they be absence of shelter, damage to the home, or the presence of a neurotic member of the family, only in very rare instances does the neurotic come alone Usually, he or she is accompanied by one or more members of the family, though the more stable members of the family may elect to stay at home and assist in fire watching and other ARP duties" Consequently, the shelter population would contain an unusually high proportion of neurotic and otherwise unstable subjects This would apply less to London, where the available shelter accommodation was much greater

The appendix to the Bristol report, containing brief case-histories of the 50 families, bears out the statements about the high incidence of neurosis

In the middle of February, 1941, the same investigators visited 25 families who had first been seen in the rest centre after being bombed out, and were now installed in a house of their own again, 8 of the families had been evacuated because of delayed-action bombs, the other 17 families (73 persons) had had their houses demolished, 3 of the families (19 persons) having been buried for a time in the ruins or in their Anderson shelters and then dug out, yet only 1 of these 19 persons showed even slight psychological symptoms

"Many of these homeless people who had lost most or all of their possessions appeared dazed or stupid in the rest centres, but all of them improved remarkably once they had been installed in a house of their own, and appeared quite different Naturally, the elderly proved less adaptable and more uprooted But on the whole adaptation was good As was to be expected, there was a relatively high incidence of psychological symptoms in these victims of enemy action, 19 persons out of 73 (26%), but only 3 men, had stopped work on account of these symptoms, and 2 of these were over sixty"

It is mentioned that in quite a number of these families, as it happened, the mother was of low intelligence, and *even in some cases actually feeble-minded*

BIRMINGHAM

From other big cities comes less detailed information A psychiatrist in Birmingham writes (June, 1941) of the rather extraordinary absence of mental ill health

"I have, however, been getting more cases of neurosis precipitated by or increased by air raids than I had some months back, and I believe there will be a fairly big time lag before the effects can be assessed Also my people are ashamed to complain of their symptoms, and thus are put on the panel and tend either to recover or become chronic before they are passed on for psychiatric treatment, while others again evacuate themselves"

A group of 50 unselected cases, 25 male, 25 female, treated at the Midland Nerve Hospital, Birmingham, between November, 1940, and May, 1941, was analysed 21 of them came from the "target" area, 16 from the periphery of the city, and 13 from the suburbs or country In 4 cases—all diagnosed "*hysteria*"—*this condition had been precipitated by raids*, in 13 cases (8 of anxiety, 3 of depression, 2 of schizophrenia) raids had aggravated a pre existing condition, in 6 patients the illness was only slightly affected, and in 27 it was not affected, by raids

COVENTRY

In Coventry the medical officer of health reported after the November, 1940, raid

"Many cases of mental distress found their way to the first aid posts for rest and sympathy They can best be described as having been stunned by events In the main their condition soon became normal On the whole the reaction of the population was one of calm defiance Doubtless there was a proportion of neurotic subjects, notably amongst the hasty evacuees Actually there has been a decrease in the number of patients attending the psychological outpatient clinics held twice weekly in the city This is probably due to (*a*) the decrease in the civic population due to evacuation, and (*b*) the likelihood that the clinic patients—

actual or potential—were among the first to evacuate Nevertheless it cannot be said that there is evidence of any notable increase in the incidence of neurosis Coventry has suffered many previous raids, and it may be that these served to eliminate the more nervous people by evacuation prior to the big raid "

A psychiatrist confirms the foregoing in the main (May, 1941):

"The numbers of new cases at the psychiatric outpatient department at the Coventry and Warwickshire Hospital have hardly altered since the air-raids began. On the average 5 new cases are seen each week. Hardly any hyperacute neuroses have been referred either to the department, to the County Mental Hospital or to the Regional Neuro-Psychiatric Emergency Hospital. During the past few months there has been a trickle of anxiety states and hysterics that could be attributed more or less directly to the air-raids These, however, hardly ever appear for a few weeks after the raid in question In the general emergency hospitals to which I am attached as consultant, one sees a few more acute psycho-neurotic conditions, often associated with physical injuries The chief psychiatric problem after a big raid is in coping with early senile cases who become maladjusted, and mental defectives who should years ago have been institutionalised Both these types seem easily to become unstuck when having to live in a shelter My general impression is that the number of neurotic disturbances is considerably higher than we realise, but that the cases just do not get treatment , that is not to say, however, that the majority of them do not make a spontaneous recovery."

MANCHESTER

In Manchester which has had severe but relatively few. raids there has not been any increase in the number of patients attending psychiatric outpatient clinics, nor according to social workers has there been any demand for psychiatric help among the adult evacuees in the quieter regions around Manchester. A previous history of neurosis, or of high-grade mental defect has been found in the patients with neurotic reactions to raids

LONDON

The number of new patients seen at various psychiatric outpatient departments in London was 4330 in 1940 as against 5945 for the same clinics in 1939 These figures cannot be taken at face value since there were many other factors influencing them besides the actual amount of neurotic illness for instance many of the clinics were working with reduced staff and much reduced hours of attendance. They suggest however. that there was no increase in neurotic illness

Further loose data about the London population indicate that as was reported from some provincial regions. the reactions to bombing may be delayed Thus in the middle of September hundreds of homeless people from East and West Ham had been moved to rest centres in Essex. They were depressed. as a group, and thus contrasted strongly with the cheerful demeanour of those seen in similar rest centres in London itself to which the people had come immediately after the raid However, these people did not need a doctor's attention. Similarly among a large number of London evacuees seen in a Yorkshire reception area after having been bombed out. intolerance and irritability were noticed, in contrast to the usual Cockney good humour and endurance Among 1600 homeless people moved to another area (which was itself in the gun barrage. and where many bombs were dropped) and billeted there there were 130 who during October, November and December. 1940, came under the notice of a psychiatric social worker as being 'nervous " 45 of these 130 however. were under the age of 16, and only one of the 85 adults became a hospital inpatient ; 12 attended a psychiatric outpatient clinic (usually only for one interview with the psychiatrist) 'In many cases the difficulties of a new environment, separation from other members of the family, and loneliness seemed as important factors as the bombing experiences they had had—minor environmental adaptations and friendly visiting were sufficient to put them right.' Most of the cases cleared up well.

A special problem in the civilian population is presented by those in the ARP services and especially in the fire-fighting service (AFS) These men are employed by the local authority, and any with incapacitating nervous symptoms are, in the London area. officially referred to a Maudsley psychiatric clinic for advice The total number of men. among the thousands of London's AFS, who have been referred to various Maudsley outpatient clinics for advice either officially or by their own doctor, was 72 between September 1940 and May 30 1941 There are, of course, some among the men who are being treated by their private doctors for neurotic symptoms, but any who have had to stop work on account of their symptoms would be referred to the clinics mentioned A few of the AFS men have been seen, after heavy exposure, suffering from exhaustion comparable to that seen in the soldiers evacuated through Dunkirk; and they show similar rapid recovery after rest, though they may turn out to have had a predisposition to neurosis, and to be henceforward less able to bear the stress of their ARP work

Among those doing the less strenuous and dangerous forms of ARP work (e.g , telephonist at a post) instances of improvement on their previous mental health are reported , they have a definite and satisfying job Similarly an investigation made in the spring of 1940 on chronic neurotics attending outpatient clinics showed that a proportion had improved since the war gave them interests previously lacking On the other hand, many persons who had been uneasy and anxious during the first year of the war (when there was no tangible danger but much room for morbid and exaggerated fears) were able to settle when they had experienced the real thing and knew the worst There are no reliable figures showing the extent to which this observation made by observers in different parts of the country, held good for the neurotic population as a whole

It would be wrong to assume, as some have, that socially undesirable behaviour especially evasion or timidity in the face of danger and privation, are the only forms of neurotic reaction evident , obsessional neurosis, for example, is seen which does not conflict with social duty and capacity to perform it . many patients with anxiety neurosis are courageous and enduring, and some of those who eventually become incapable of carrying on with their work because of neurosis have long done good service in spite of their symptoms Their illness is incapacitating, like physical disability ; if criteria of moral and social responsibility are introduced, they lead to the conclusion that undesirable or blameworthy manifestations of neurosis and psychopathic personality are far less often seen in neurotic civilians than in neurotic soldiers This does not imply a reflection upon the soldiers (who are mostly yesterday's civilians) but is an outcome of the different environmental and emotional causes at work in the two groups Discussion of the causes of neurotic symptoms would be irrelevant here: as is also discussion of the forms neurotic illness takes when these war-time causes are operative. An account of the types of unhealthy mental reaction seen among the civilian population may be found in various articles (Felix Brown 1941. Harris 1941, Pegge 1940) There is nothing new in these types of reaction, nor in the semistupor described in a few cases as an immediate reaction to bombing

PSYCHOTIC REACTIONS

So far neurotic reactions have been considered. The common distinction between neurosis and insanity is however. at bottom so arbitrary and vague except for legal and administrative purposes that many cases fall equally well into either category Thus among those committed to observation wards on a relieving officer's order since the war. there have been some who would in ordinary times be treated as neurotics in an outpatient department or an ordinary hospital ward

Admissions to observation wards in London, the best provided and organised city in this regard. have varied not only according to the number needing admission but also according to the available accommodation, several large observation wards having been blasted or set on fire The Dulwich observation ward serves a population of approximately 700 000, in a district which has been severely and repeatedly attacked from the air Between September, 1940, and February, 1941, 435 patients were admitted—an increase of 25% on previous figures But probably this does not indicate an actual rise in the incidence of patients needing admission, for the 250 beds of the Maudsley Hospital, barely a mile away, were no longer available, and its outpatient department was temporarily closed, moreover, an observation ward in Fulham had been bombed and its clientele was for a while transferred to Dulwich There was, however, a relative increase in senile cases, as has been reported from many other bombed towns Elderly people are reluctant to leave their homes, no matter what the danger, and while some bear bombardment with remarkable indifference, others find the dislocation of their lives too much for them, their accustomed rut is not there for them to run in, their relatives who looked after them are dispersed, and in the confusion they become helplessly confused Of the 435 patients admitted, 32% were diagnosed senile dementia, 20% other organic disorders, 2% psychopathic personality, and 1% anxiety neurosis or hysteria 20% had a depressive syndrome, 5% mania, and 20% schizophrenia There were in all 13 cases that seemed directly attributable to air raids, and 9 other cases in which the raids had played a minor part in causation The case-histories in Harris's (1941) paper indicate the type of case, and indicate also how a condition apparently attributable to air-raid stress can be at bottom one of general paralysis of the insane or paralysis agitans, the problem (apparent aggravation of physical disease by psychological factors) is one that became familiar to pensions boards in and after the last war

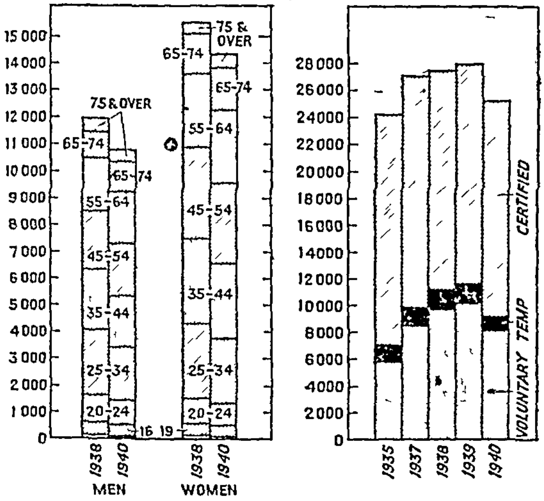


Fig 4—Analysis of admissions to all county and borough mental hospitals in England and Wales during the years indicated

An observation ward in the badly attacked East End of London (Bow) admitted during the four weeks Aug 28 to Sept 24, 1940, 95 patients, whereas during the corresponding period of 1939 the number of admissions had been 120, the decline was chiefly in male cases (39, as against 62 in 1939)

Fluctuations in the population do not make the figures for admissions to all county and borough mental hospitals in England and Wales so difficult to interpret as those of London Total admissions in such hospitals were 8% less in 1940 than in 1938, the falling off was greater among men (9%) than among women (7%) The fall in number of admissions (fig 4) may or may not reflect the changing incidence of mental illness in the population at large Probably it does not Factors of an extraneous nature have operated to keep the number of admissions low, the chief of these being the demands made upon available accommodation in the hospitals by the conversion of many of them either wholly or partly into emergency hospitals for physical illness This may be seen in the changing numbers of voluntary patients admitted The voluntary admissions had until the war been increasing both absolutely and relatively to the certified admissions In 1937 voluntary patients were 31% of all admissions, in 1938 35%, in 1939 36%, but in 1940 they fell to 32% Whereas in 1940 the certified admissions had only diminished by a fiftieth from the 1939 level, the voluntary admissions in 1940 were a fifth less than their 1939 number This falling off was due to administrative action and to the fact that voluntary patients include those in whom admission to the mental hospital may not be imperative The actual numbers of voluntary patients admitted in 1940 had fallen below the 1937 level (fig. 4)

The general age-distribution of all mental hospital admissions in England and Wales remains about the same—most of the cases come from the age groups 25–65, the decade 45–54 supplying the largest quota of women, and the decade 25–34 the largest quota of men The maximum variations between 1938 and 1940 are seen in the age-groups 20–24, 25–34, 35–44, 45–54, where the number of men admitted diminished by 20%, 16%, 15%, 13% respectively, and the number of women by 11%, 13%, 14%, 11% respectively, and in the age groups over 75 where the male admissions increased by 41% and the female by 34%, though the actual numbers are not large and the absolute increase considerably less than the absolute fall in other age-groups If 1939 be compared with 1938 and with 1940, variations are observed especially in the 16–19 age-group. The explanation is not clear, 1939 was, of course, a mixed year partly of peace and partly of war, and male adolescents may have been influenced by the introduction of the Militia Training Bill

There are some indications of mental ill health which do not come under the notice of doctors and hospitals so much as of legal authorities. Suicide is the most prominent of these Recent and reliable data about suicide are not available for England and Wales For Scotland the figures have been published on a quarterly basis

	MALE					FEMALE					
Quarter	1	2	3	4	Total	1	2	3	4	Total	
1938					297					163	(460)
1939	78	91	82	61	312	40	34	43	29	146	(458)
1940	66	68	65	59	258	38	38	38	28	142	(400)

The annual report for 1938 does not provide the data on a quarterly basis The quarterly returns for 1939 and 1940 provide age-groupings, but do not subdivide these according to sex The figures indicate a significant fall in the total suicides for 1940—the total of 400 compares with 458 for 1939 and 460 for 1938 and is the lowest since 1925 If the returns are subdivided into two age-groups, the figures are

	OVER 45 (M AND F)					UNDER 45 (M AND F)					
1938					292					168	(460)
1939	73	85	74	58	290	45	40	51	32	168	(458)
1940	71	61	64	38	244	33	45	39	39	156	(400)

This suggests that among those under 45 there has not been a fall in the frequency of suicide, there may have been a rise The small reduction, from 168 to 156, would be within the normal range of chance fluctuation The under 45's have lost a considerable proportion of their male population to the Army (Army deaths, from whatever cause, are not included in the civilian returns during war-time), and young males normally contribute a heavy percentage of the total suicides under 45

Among the "over 45's" the reduction in 1940 of 16% is significant The size of the population concerned has not changed materially I would not speculate about the reason for this fall in Scotland. Suicide-rates usually fall during war The rate became appreciably lower between 1915 and 1918 in belligerent nations (Great Britain, Australia, New Zealand, South Africa, Germany, Italy, U S A, Japan) and in non-belligerents too (Sweden and Switzerland) Nor is this wholly accounted for by the high number of men within the suicide-age who are withdrawn into fighting services In England and Wales there was a fall of 10% in the suicide-rate for women during the last war

ALCOHOL

If the consumption of alcohol had risen greatly since the war it might suggest an increased amount of mental instability in the population—as the cause of the drunkenness, and perhaps also as an effect of it Figures, however, can easily be misleading here

By agreement with the Government no more beer (measured in standard barrels, 36 gall of specific gravity 1055) is produced each year than in the year ended Sept 30, 1939 The total bulk of beer produced ("bulk barrels") may be greater, but the amount of alcohol cannot rise above the 1939 figure Shortage of labour and of materials (especially malt and sugar), damage to plant by bombing, and problems of transport have made it difficult for even this output to be attained In some areas there has been an increased demand, on the other hand there are grounds for believing that the consumption of beer ell off notably in blitzed areas such as London Where there as been a local increase in demand it is attributable to the hift of population, longer hours of daylight (double summer ime), more money in wages, and fewer means of spending it n food and clothing

Other alcoholic drinks have become notoriously hard to get The output of whisky and gin for the home trade has been imited to half, and these drinks have become inordinately expensive, brandy and wines are becoming unobtainable Until the war the consumption of British manufactured wines made from imported grape juice had risen steadily from 2,841,977 gall in 1929–30 to 6,470,691 gall in 1938–39, but the tax on them has been increased considerably, and the source is no doubt nearly exhausted

Police-court statistics are informative about areas where drinking is excessive Figures are available for 82 out of 85 English and Welsh county boroughs, and for 22 out of the 66 counties There were 35,478 proceedings for drunkenness in the county boroughs in 1940, this meant a drop of 12% from the previous year There were 29,129 convictions—a drop of 9% from 1939 In the 22 counties proceedings and convictions for drunkenness had similarly diminished by 12% Part of the decrease in the county boroughs has been contributed to by London where the fall was notable

	1940	*1939*	*Decrease*
Proceedings	14,145	18 062	3917
Convictions	11,980	15 252	3272
Charges proved	13,806	17,600	3794

It would be a mistake to read much into these figures. the police had more important things to do than arresting drunks, and the population had lessened

The number of patients admitted to a London observation ward (Bow) for alcoholic psychosis in 1940–41 did not change appreciably from that of a normal peace year 1935–36 There is no evidence of increased drunkenness in the home counties, to which a part of the London population has moved The areas in which there has been the most striking decrease or increase in proceedings and convictions for drunkenness are given in table IV

TABLE IV—AREAS WITH LARGEST RISE OR FALL IN PROCEEDINGS AND CONVICTIONS FOR DRUNKENNESS

—	Proceedings		Rise or fall	Convictions		Rise or fall
	1940	1939		1940	1939	
DECREASE						
Brighton	136	270	134	110	235	125
Cardiff	277	377	100	171	231	60
Kingston upon Hull	440	547	107	412	511	99
Liverpool	2439	2772	333	1555	2023	468
Manchester	1769	2505	736	1229	1741	512
Newcastle-on Tyne	804	926	122	717	816	99
Nottingham	209	276	69	164	189	25
Southampton	187	246	59	49	67	18
Salford	412	371	41	345	296	49
INCREASE						
Birkenhead	203	143	60	118	93	25
Birmingham	4219	4082	137	3772	3656	116
Bristol	334	288	46	189	136	53
Carlisle	124	84	40	118	75	43
Middlesbrough	425	368	57	403	343	60
Gateshead	271	227	44	254	206	48
Newport	573	327	246	442	261	181
Oldham	229	175	54	195	156	39
Portsmouth	317	275	42	290	229	61
Rochdale	93	43	50	78	41	37
South Shields	259	184	75	235	165	70
Swansea	429	273	156	304	159	145
Warrington	132	79	53	124	68	56

ACCIDENTS

Road accidents have increased alarmingly. The Royal Society for the Prevention of Accidents attributes this not only to material factors such as shortage of traffic police, abnormal special traffic, and lighting restrictions, but also to psychological changes "mental preoccupation due to war strain, exasperation induced by transport difficulties and delays" and so forth The Parliamentary White Paper of Nov 21, 1941, says the same Between September and December, 1940, 4380 people were killed on the roads—245 more than in the corresponding months of 1939, and 1884 more than in the corresponding months of 1938 In the first 12 months of the war 8358 persons were killed on the roads, an increase of 25% over each of the years 1935–38 In the second 12 months of the war the number of deaths rose by a further 20% to 10,073 During May, 1941, 701 people died of road accidents, against 449 in May, 1940; for June the corresponding figures were 618, against 479 It is not possible to say how far mental stress has contributed to this enormous rise in road accidents, most of which occurred during the hours of daylight

It has been asserted that accidents in factories may be symptomatic of strain This is, however, not the main explanation of the rise in industrial accidents which occurred immediately after war broke out and has continued, during 1939 fatal accidents in factories increased by 17%, and in 1940 they were 25% higher than in 1939 When so many untrained youthful workers are being hurriedly absorbed into industry, a high accident-rate is to be expected Nevertheless, the possibility that the strain of war-time conditions with resultant fatigue and carelessness, acts as a contributory if minor cause of accidents cannot be eliminated More plainly relevant are reports on the health of factory workers In the Annual Report of the Chief Inspector of Factories for 1939 the senior medical inspector described conditions (possibly neurotic) of pallor, impaired digestion and lassitude which it was thought might have been due to the black-out strain produced by expectation of air-raids, anxiety, overwork, &c The Deputy Chief Inspector said in May, 1941, that a return from 5000 factories showed that nearly half of them were working over 56 but under 60 hours a week This is risky in the long run from the standpoint of mental and possibly of physical health, the 1916 Committee on the Health of Munition Workers spoke of the "state of reduced efficiency and lowered health" due to insufficient daily and weekly rest Adequate data are not available Absenteeism may also be a symptom of mental, or of physical, ill health, though the causes indicated in the 17th report of the Select Committee on National Expenditure—especially transport difficulties and longer working hours—are more common and important Some investigations have suggested, however, that the strain of poor sleep (through air-raids), anxiety, loss of home, and long hours of work followed by tiring travel play a large part in absenteeism in such badly blitzed towns as Plymouth or Bristol

CHILDREN

Observations on children have been chiefly directed towards the ill effects of separation from home and parents through evacuation, and the effects of air-raids, juvenile delinquency has excited public and official attention

In February, 1941, an investigation, of the questionnaire type, into 6000 Bristol school children after severe air raids, showed about 300 (4%) with symptoms of nervousness attributed to raids—anxiety, trembling, crying, enuresis, headache, sickness, dizziness Half the affected children were between the ages of 5 and 7, a third between 8 and 10, a quarter between 11 and 14 Later a survey was made of some Bristol children who had had to be removed hurriedly from a hospital when it was hit by a high explosive bomb, at the height of a severe air-raid Nearly two thirds of the children showed signs of stress for a period between 3 weeks and 2 months afterwards and 11% of them still showed persistent symptoms 7 months afterwards, but these did not occur in children over 5½ years of age Similar observations were made on other children in Bristol, and in Manchester, as well as on children evacuated to a Welsh seaside area after severe raids in these children the amount of nervous disturbance was dependent, apparently, on the amount of fear experienced by the child during the raid, frightened mothers communicated their fears to the children An investigation of children evacuated from London indicated that among 15,000 there were 420 cases of breakdown (2 8%) 249 were boys and 171 girls, most of them between 7 and 11, and their symptoms were enuresis, hysterical vomiting, sleep walking, fits, tics, anxiety and depression "Sometimes the symptoms, on arrival from a bombed area, were really acute for a few days One child had presented the complete picture of an adult depressive psychosis for nearly seven weeks" (This report is by a non-medical observer)

There is a consensus of opinion that children show great adaptability and recover well from air-raid effects, if simple, sensible measures are taken, likewise, that the strain of evacuation is great or little according to the care and success with which the foster home or billet is selected The carefully executed survey of London children evacuated to Cambridge demonstrates this, so far as the pre-blitz period is concerned An incidental examination of 656 school-children, reported in this survey, showed that 87 (13%) needed treatment because of mental ill health—36 were excessively anxious or depressed, 5 were self-absorbed, 36 abnormally quarrelsome and jealous, and 10 apathetic or delinquent

A great deal has been said in the newspapers and elsewhere about the increase in juvenile delinquency, which might be a sign of mental ill health In Manchester 1328 juveniles were prosecuted for indictable offences in 1940, compared with 746 in 1939 In Birmingham 1919 children (1720 boys, 199 girls) appeared on serious charges (e g , larceny, breaking and entering) before the Juvenile Courts during 1940, compared with 1433 in 1939 (1315 boys, 118 girls), and 1190 (1121 boys, 69 girls) in 1938 For the first quarter of 1941, however, there is a drop in Birmingham (351 boys and 49 girls, against 445 boys and 44 girls for the first quarter of 1940) The Home Office and Board of Education Circular (June, 1941) states that returns for the first twelve months of the war, compared with the previous twelve months, indicate an increase in the whole country of 41% in the number of children under 14 found guilty of indictable offences, and an increase of 22% in the age-group 14–17 The official circular points to the chief factors responsible for this The headmaster of a Liverpool school, author of a recent monograph on juvenile delinquency, writes

> “ In my own school there is no sign that the mental health of the children has been upset by bombing—and much serious damage has occurred in the immediate neighbourhood of the school Even those children (about a dozen) who have had their homes destroyed while they were either in them or in their shelter seem to be perfectly normal in their conduct
>
> I am satisfied that the increase in delinquency cannot be considered as symptomatic of neurosis The very fact that we were able to forecast the increase, and even, broadly, its amount, is an indication that other causes must be held responsible Lack of parental control is always the most potent cause of delinquency As a direct result of the war, much of the abject poverty found among certain classes has gone , but the conditions in which they live remain the same, or often worse when families have to find fresh accommodation In families where the father is now away from home there will often be a marked deterioration in control
>
> What I have said refers to children who have remained at home Many thousands of children, of course, are altogether away from the care of their parents, and not all are properly supervised in their billets This has provided further opportunity for delinquency Again, the police have less time to spare for the prevention and detection of crime In other words, the war has caused an all round relaxation of control, with the inevitable result that more children have got into trouble I have mentioned only a few points , many others such as the interruption to education and the shortage of men teachers could have been enlarged upon I am not prepared to say that ‘ greater laxity of external control under war conditions ’ is the sole cause of the increase in delinquency, but I am convinced that it is the chief one ”

It seems proper, therefore, to regard juvenile delinquency as a social malady, still remediable, rather than as evidence of mental ill health in individuals That is not to say that social ill health is immaterial from the standpoint of mental hygiene , psychopathic disorders of personality, tending towards neurosis, flourish in a bad social soil

DISCUSSION

The incidence of mental illness in the Fighting Services has not been dealt with here, though in so far as exposure to enemy attacks is concerned, soldiers in this country are in the same position as civilians Where they differ is in the circumstances of their daily life , the soldier is separated from his family and has very little say in the choice of his military job, and less independence in most respects than he had before Such social and emotional factors evidently play a larger part than exposure to danger in determining neurotic illness in soldiers while in this country The incidence is not high, but is higher than in the corresponding civilians, who have presumably found or made for themselves a milieu into which they fit The psychopathic soldiers who are discharged from the Army as unfit go to swell the ranks of neurotically ill persons in civilian life , they do not, as is sometimes suggested, lose their symptoms as soon as they have obtained their discharge Their subsequent industrial level, in a random sample of 60 whom I followed up, was lower than before they joined the Army, and they are in most cases unduly upset by air-raids

The analysis of causes for neurosis is notoriously misleading It is almost impossible to assign to the various stresses of war their relative importance in producing mental ill health Certainly, the terrors of an actual air-raid (against which the careful preparations of the Emergency Medical Service were directed, to avert panic and to treat sudden anxiety, stupor, or hysteria) have proved less important than the disruption of homes, and other secondary effects of bombing , and more important than air-raids are the great social alterations of the war (rearrangement of industry, evacuation) It is probable that a lowering of physical health, whether through epidemics or nutritional changes, would lead to a corresponding rise in the incidence of neurotic illness , they are very closely linked (Compare the London figures for “ neurotic symptoms ” and “ neurosis,” table III)

The mental effect of air-raids varies with local conditions London, sprawling and many-bodied, can suffer much damage without most of its citizens being personally and directly affected Plymouth or Coventry, more unified, small and concentrated, can be so devastated that every citizen is affected, and the interference with essential services—*food, warmth, light, water*—serves to intensify depressive and other neurotic reactions A non-medical observer (Harrisson 1941) has said that after raids on these towns there are cases of lethargy or stupor which are not seen by doctors , this has been questioned, but in any case his statement that an air raid means a more personal and upsetting threat to the inhabitants of a provincial city than to Londoners can be accepted, with some of its implications as regards neurosis

Attention to signs of impaired morale in the population concerns itself chiefly with the premonitory and early signs of neurosis, such as are shown by people who cannot talk of anything else but the bombs for weeks after a raid , paranoid people who suspect strangers of being spies , depressive pessimists who see no chance of their town reviving after all this destruction , anxious worriers about the imminence of the next raid The number of people showing such behaviour after a raid is unknown, but no-one has asserted that it is considerable, or that the unhealthy manifestations, when they occur, persist long

Investigation of all these matters is desirable since they affect public safety and public health, and the available data are scanty and in some respects discrepant Discretion and relevant experience would be essential in any field investigators The existing state of the law regarding compensation for neurotic disabilities indicates the danger , a woman was recently awarded £700 damages for hysteria and “ nervous shock ” sustained by merely witnessing a motor-car accident as she walked along the footpath If for “ motor accident ” could be substituted “ exploding bomb,” and for “ damages,” “ injury allowance ” or “ pension,” the situation would be serious, not only for the public exchequer but for the public health The inquiry could, however, safely and profitably be carried out by properly trained people aware of the pitfalls

SUMMARY

Air-raids have not been responsible for any striking increase in neurotic illness Crude figures from hospitals and outpatient clinics even suggest a considerable drop , the Ministry of Pensions figures, however, give a better indication of the problem

Reliable data from London and Bristol, and the impressions of good medical observers, indicate that after intensive raids there is a slight rise in the total amount of neurotic illness in the affected area, occurring chiefly in those who have been neurotically ill before Neurotic reactions may not show themselves for a week or ten days after the bombing , they usually clear up readily with rest and mild sedatives Hysteria is uncommon, anxiety and depression are the commonest forms of upset

The incidence of neurotic illness has been low in fire-ghters and other workers in civil defence

Insanity has not increased, so far as figures are to and, though more persons with senile deterioration have been admitted to mental institutions than before, because their relatives could not any longer look after hem or because the raids had in other ways disturbed heir routine and their precarious adaptation The same was true of some defectives

Suicide has diminished in Scotland, especially among he middle-aged and elderly Figures for England and Wales are not available

It is impossible to distinguish between neurotic illness due directly to air-raids and that which may follow such secondary troubles as disruption and loss of one's home, evacuation, difficulties in transport to and from work, or temporary loss of employment It is to the war as a whole, with its accumulated stresses, that people have had to adjust themselves, and signs of failure to do this can be taken as warning signals of neurosis An increase in alcoholism would be such a sign, there is no evidence that there has been any increase of this sort The rise in road and industrial accidents has been considerable, many causes are at work, the psychological ones among which have not been analysed There has similarly been a rise in juvenile delinquency this cannot be regarded as tantamount to a rise in juvenile neurosis, but it suggests that the same environmental factors are at work as conduce to neurosis

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RADIOGRAPHY OF THE FEMORAL NECK

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F R C S I
ORTHOPÆDIC SURGEON TO WELLHOUSE EMS HOSPITAL BARNET

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F S R
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OPERATIONS on fractures of the femoral neck necessitate accurate, rapid and clear radiography A combined film holder and pelvic rest is here described which helps to achieve these essentials Usually lateral pictures of the neck of the femur are taken with the tube between the legs, and the film cassette held manually in the region of the iliac crest This arrangement has many disadvantages The film may not be held steadily, or at the correct angle, or in the same position for each exposure, the cassette has to be wrapped in a sterile towel, which causes delay, and finally there is danger of exposing the assistant to direct X rays The apparatus described here overcomes these disadvantages It has been in use for about 18 months and even though the cases in which it has been employed have been fibular grafts (lately the grafts have been reinforced by a single fin nail) the definition obtained has been satisfactory (fig 1) The idea is based on the technique employed with the curved cassette before it fell into abeyance, and on apparatus seen by one of us (K C C) in the Orthopædic Hospital at Copenhagen

The apparatus (fig 2) is an addition to the usual perineal bar and buttock rest It consists of a horizontal cassette holder, to which is attached a vertical curved film support The buttock rest and horizontal cassette holder are made from two pieces of five ply wood (15 by 13 in), which are fixed ¾ in apart by three small wooden stops, or distance pieces, which also ensure correct and rapid positioning of the cassette for the antero-posterior film The perineal upright, roughly hemispherical in cross section, is made from a solid wooden block 6 in high and 4 in wide at its base It is let into the horizontal platform close to one side, and surrounded on its curved surface by a piece of three ply wood, a slot ⅜ in wide is left between the block and the ply wood to take the special X ray film pack (fig 2) The block is bored to fit the perineal bar of a Hawley or other orthopædic table, and is lead covered to prevent X ray scatter

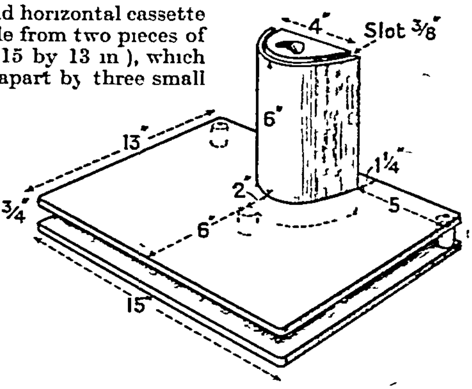

Fig 2—Horizontal cassette holder and vertical curved film support to fit over the perineal bar of the Hawley or other orthopædic table

TECHNIQUE

The ordinary pelvic rest and perineal bar of a Hawley table are fixed in position and the apparatus is fitted over the perineal bar The patient is adjusted so that the perineum fits closely to the upright (fig 3) The horizontal pieces are prevented from closing under the patient's weight by the central wooden stop A small X-ray film, 8½ by 6½ in, is used for the lateral exposure This has been previously prepared as follows

The film is placed between intensifying screens which are in turn inserted into a film envelope, the envelope is closed and with its contents forms a film pack which

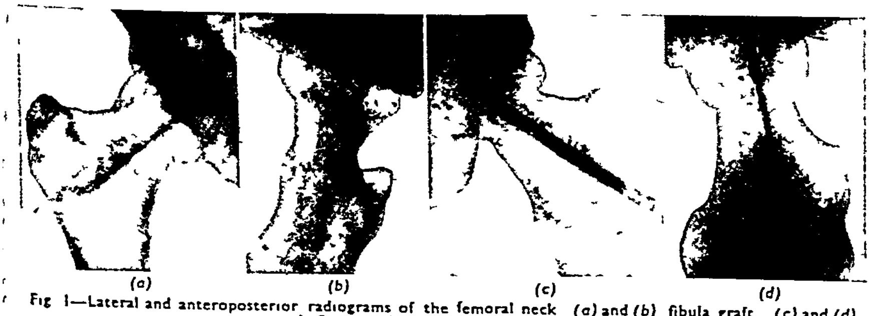

Fig 1—Lateral and anteroposterior radiograms of the femoral neck (a) and (b) fibula graft (c) and (d) a single fin central nail used to reinforce the graft

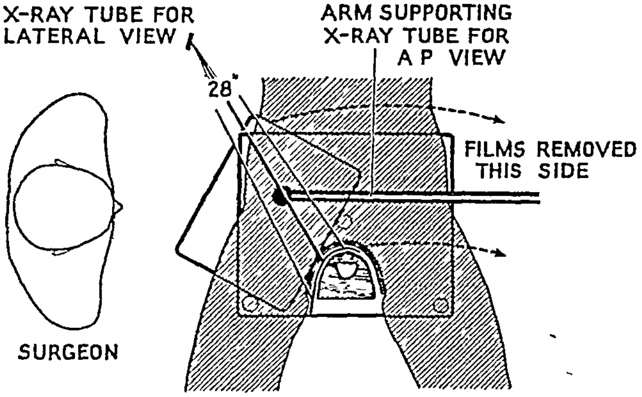
X-RAY TUBE FOR LATERAL VIEW
ARM SUPPORTING X-RAY TUBE FOR A P VIEW
28°
FILMS REMOVED THIS SIDE
SURGEON

Fig 3—Patient placed with perineum closely fitting upright anteroposterior and lateral films in position two X-ray tubes are in position and the direction of the X ray beam for the lateral view is indicated The films are removed from the side opposite to the surgeon

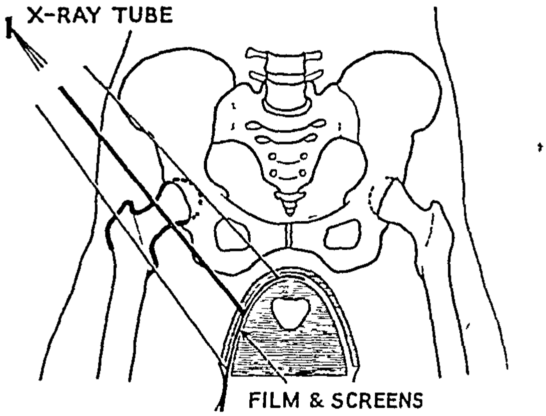

Fig 4—Film pack in position for the lateral view alignment between tube, neck of femur and film is indicated

replaces the usual metal cassette Special intensifying screens are available for this work, they are coated on a pliable celluloid base and do not crack when used without a cassette in the curved position

The film pack is gently curved to the shape of the perineal upright, before it is fixed in position between the block and its shield (fig 4), the correct alignment between film, neck of femur and tube direction is then readily obtained The two X-ray tubes are placed in position for the anteroposterior and lateral views, and they remain in this position throughout the operation When the lateral film has been exposed it can be removed from the *opposite* side to the surgeon and the cassette for the anteroposterior picture (10 by 8 in) inserted from this side Thus, the surgeon is not disturbed at any time during the operation

Rapid developer has been abandoned Instead ordinary developer and fixing solutions which have been heated to 90° F are used By this method an X-ray picture which is clear and permanent can be seen in 2 min. from the time the film is exposed (fig 1)

We wish to thank Mr S H Barr, radiographer at Wellhouse Hospital, and Mr A W Spain, clerk of works at the Royal Northern Hospital, for their assistance

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DEVELOPMENT OF HYPOCHROMIC ANÆMIA DURING PREGNANCY

RESPONSE TO IRON THERAPY

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IT is well known that physiological changes in blood-volume, and the demands of the fœtus on maternal iron reserves, render hypochromic anæmias especially frequent during pregnancy The characteristic decrease in hæmoglobin percentage, unaccompanied by a fall of the same degree in the red cells, makes the estimation of hæmoglobin the best guide to the adequacy of the woman's iron reserves The object of the present investigation has been to determine whether the current war-time dietary restrictions have had any detrimental effect on the hæmoglobin concentration of the blood of women during pregnancy The changes in hæmoglobin percentages have been followed and the results compared with others made on similar groups of cases before the war At the same time the effects of supplementing the diet with a medicinal preparation of iron have been examined

METHODS AND CLINICAL SOURCES

All hæmoglobin estimations in the present study were done by one of us (H P W) using the Haldane method (100% = 18 5 c cm O_2 capacity = 13 8 g Hb %) with a standard tube checked against that used by Price-Jones Estimations have as a rule been made once a month, but because regular intervals have not always been possible the hæmoglobin alterations during the period of attendance have been calculated as a weekly rate

The women attended the antenatal clinic of a hospital in the south-eastern suburbs of London between May, 1941, and March, 1942 The neighbourhood is classed as a "neutral" area, but air-raids were both frequent and severe there during 1939–40 Most of the women belonged to the upper artisan and lower middle class, very few could be considered as "poor" The majority were young primiparæ, though for this survey no distinction between nulliparous and multiparous women has been made The women usually attended the clinic for the first time between the third and fifth months of pregnancy and were examined monthly until the 25th week of gestation, thenceforward fortnightly until the last month, during which they were seen every week The clinical examinations (by H A H) were of the usual type—i e, blood-pressure, routine urinalysis and physical examination with X ray or further pathological investigations whenever considered desirable Apart from earlier estimations, every woman had her hæmoglobin estimated during the last month of pregnancy

The clinic was held on two days a week, and in order to control the results of treatment with iron all those women attending for the first time on one day were thenceforward given iron as ferri et ammon cit (gr 30 t d s) until delivery, except in a few cases where this preparation was ill tolerated when pil ferri sulph in the same dosage was administered Those who attended on the other day received no treatment with iron, whatever their initial or subsequent hæmoglobin percentages All cases in which the iron therapy was known not to have been followed have been omitted from this study

HÆMATOLOGICAL FINDINGS IN PREGNANT WOMEN WITH AND WITHOUT ADMINISTRATION OF IRON

—	GROUP 1	GROUP 2
	Treated (196 cases)	Untreated (196 cases)
Av initial Hb	75 % (10 25 g %)	79 % (11 0 g %)
Av terminal Hb	77 % (10 65 g %)	70 % (9 7 g %)
Proportion below 70 % Hb initially	24 5 %	9 2 %
Proportion below ,, ,, terminally	14 3 %	40 3 %
Proportion showing improvement (A)	54 %	13 %
Proportion showing no change (B)	9 %	6 %
Proportion showing deterioration (C)	37 %	81 %
Av weekly Hb increase in (A)	1 34 %	0 82 %
,, ,, ,, decrease in (C)	0 86 %	1 35 %

RESULTS

The results of the hæmoglobin estimations for the two groups of treated and untreated cases are set out in the first table The average hæmoglobin percentage on first attendance at the clinic was somewhat higher in the group of untreated women than in the treated group, although no selection had been exercised The hæmoglobin percentages at the end of pregnancy were, however, reversed—in those patients who received iron prophylactically it had increased while in those who were untreated it had decreased.

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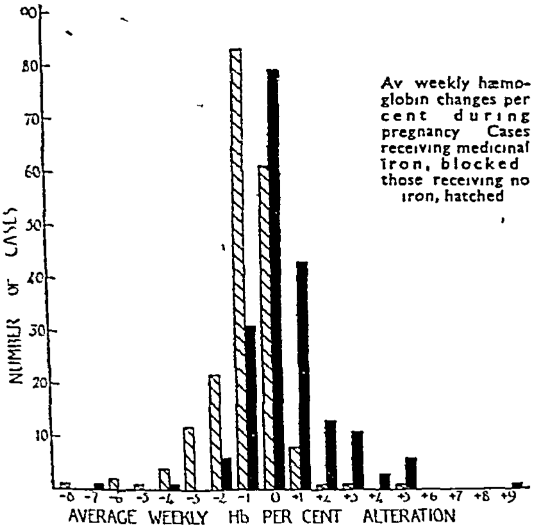
* Gillson scholar

In order better to show the effects of iron therapy, the two groups have been divided into three subgroups (A) those who improved, (B) those who remained unchanged, and (C) those whose hæmoglobin fell during the periods of observation. The proportions of cases falling into these subgroups are shown in the table. Of those receiving treatment, 54% showed an improvement, while of the untreated group 13% only improved. The extent of improvement in the two groups was also strikingly different, the average weekly rise in hæmoglobin in the treated cases being 1·34% (Haldane units), while that of the untreated case was 0·82%. Conversely, the proportions showing a decrease in hæmoglobin during pregnancy were 37% and 81% in the two groups. The average weekly falls in hæmoglobin in the subgroups (C) were considerably greater in the untreated than in the treated cases, this figure being 1·35% for the former and 0·86% for the latter. These differences for the two groups are statistically significant. The frequency distribution curves of the weekly hæmoglobin changes are shown in the figure.


Av weekly hæmoglobin changes per cent during pregnancy. Cases receiving medicinal iron, blocked; those receiving no iron, hatched.

There was a considerable difference in the proportions of the two groups initially falling below 70% hæmoglobin. In spite of the initial excess of such anæmic cases in the group receiving iron, an improvement occurred among these women so that at the end of pregnancy they were better than those who had received none. These latter had deteriorated so considerably that the very high proportion of 40·3% had hæmoglobin levels below 70%.

DISCUSSION

Reviewing the published work on the alterations in hæmoglobin percentages in normal pregnancies is difficult because of the many methods of estimation that have been employed. Often no description of the standard used has been given. Furthermore the period of pregnancy when the samples were examined is often not stated and, if repeated observations have been made, the intervals between the examinations are often omitted. For these reasons, and because of the discrepancies between American and British figures for "normal" hæmoglobin percentages (Price-Jones, Dill and Wright 1931), little attempt has been made to compare the present figures with those reported for pregnant women in other countries. The differences between this series of cases and those reported by other workers in this country shortly before the war may, however, be discussed.

It is now well established that the hæmoglobin percentages of women fall during pregnancy owing to a relative increase in plasma (see Dieckmann and Wegner 1934, Evans 1937), but observers agree that an anæmia of the hypochromic type is often superimposed (Bethell, 1936). Dieckmann and Wegner (1934) and Watson (1938) think that hæmoglobin levels below 10 g. % (72% Haldane) should be regarded as unphysiological. In this country these figures are usually accepted and cases falling below 70% have been regarded as anæmic (Davidson et al., 1935, MacKay 1935, Reid and Mackintosh 1937).

It has been found that the average initial hæmoglobin of 77% for the entire series is lower than the Aberdeen figures collected in 1935. They were not, however, so low as that found by Fullerton (1936) in his group of pregnant women having a weekly family income of less than 15*s.* per head, who had an average hæmoglobin of 73%. The terminal figure of 70% found for the group of untreated cases in the present series falls below that of Fullerton's group although their economic status was superior to that of the women he examined. MacKay's (1935) group of pregnant women were probably economically intermediate between Fullerton's and the present series. She found an average hæmoglobin of 83·5%, a figure far higher than that for the present series.

When the criterion of a hæmoglobin level below 70% is taken as the lower limit of normality, 16% of the entire series fell initially below this figure. This is only slightly better than that for the Aberdeen group of 17·5% and that for Fullerton's first group (less than 15*s* per head weekly), 19·5% of whom fell below this level. The present series is worse than Fullerton's second group of women with over 15*s* per head of family weekly, 14·3% of whom fell below this standard, while of MacKay's series only 4·6% had hæmoglobins below 70%. The proportion falling below 70% hæmoglobin at the end of pregnancy in the untreated group in the present series is considerably greater than any hitherto recorded, 40·3% showing such pronounced anæmias.

In the group of treated cases the terminal hæmoglobin concentration in the women's blood may be regarded as satisfactory. Even allowing that patients attending clinics sometimes take medicinal preparations irregularly, especially if these are unpalatable, the average hæmoglobin percentage rose during the period of observation, while the numbers falling below 70% hæmoglobin declined from 24·5% to 14·3%. The fall in the subgroup (C) was slight and within physiological limits. This transforming of a fall into a rise of hæmoglobin level in pregnancy in women treated with iron supports the findings of other workers (Galloway 1929, Toland 1936, Corrigan and Strauss 1936, Gottlieb and Strean 1939, Widdowson 1939).

No single factor has been found to account for the low levels of hæmoglobin percentages in the present series. The women when first seen already had hæmoglobins lower than is usual at that stage of pregnancy, so it is probable that they started their pregnancy with some degree of anæmia which became progressively worse. Though in some instances they complained of fatigue, giddiness or breathlessness, they were generally surprisingly well and able to continue their normal occupations. Financially their conditions had altered comparatively little since the beginning of the war, the chief changes having been brought about by the rationing of foodstuffs. Strauss and Castle (1933) found that anæmia developed during pregnancy if there were dietary or digestive disturbances, while Reid and Macintosh (1937) observed that the poorer the financial condition of the women examined the lower the hæmoglobin percentages tended to be. Davidson and his colleagues (1933, 1935) pointed out that the diets of low paid and unemployed workers were deficient in iron. It appears likely, therefore, that at the present time the condition of these pregnant women simulates that found ordinarily in women of lower financial status and that diets containing insufficient iron are more frequently taken than in normal times. It is important that milk is the only supplementary food allowed to women during pregnancy and that this contains no iron, so cannot combat the development of nutritional iron deficiency anæmias.

It appears from the figures obtained for this series, which may be taken as a fair sample of the pregnant women in the artisan population of the country, that the present condition of their blood is unsatisfactory and considerably worse than before the outbreak of war. Two main methods of overcoming the development of hypochromic anæmias appear to be possible. First, the administration of therapeutic iron preparations in adequate dosage should find a routine place in antenatal treatment Secondly, training in simple dietetics at the clinic centres might be organised to help the women to choose foods rich in iron and to prepare them in the most appetising manner

SUMMARY

Repeated hæmoglobin estimations by the Haldane method have been carried out on 392 pregnant women from about the third month of gestation until term

Half of the women examined were treated with medicinal iron throughout the period of observation, while the rest had no such medication

The average initial hæmoglobin percentages were 79 in the untreated and 75 in the treated group The corresponding average terminal percentages were 70 and 77, so that iron administration converted a deterioration during pregnancy into an improvement

From comparison with other published figures it is concluded that women of the artisan class are more anæmic than before the war

Iron preparations should be given as a routine during pregnancy and antenatal clinics should help expectant mothers to select and prepare iron-rich diets

We wish to express our thanks to Dr Constant Ponder medical officer of health for the county of Kent, for facilities afforded in connexion with these investigations

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Medical Societies

DRIED FOODS

The Nutrition Society held its sixth meeting (fourth of the English group) on July 25 in conjunction with the Food Group of the Society of Chemical Industry, the subject being Dehydration of Foods and its Effect on their Nutritional Value The work reported was carried out mainly under the Food Investigation Board of the Department of Scientific and Industrial Research, and Sir **Edward Appleton**, secretary of that department, took the chair at the morning session The advances made in the study of drying foods were, he said, the result of excellent collaboration between the Low Temperature Research Station at Cambridge and the Torry Research Station at Aberdeen, which studied the technical methods of drying, and the Dunn Nutritional Laboratory at Cambridge at which the nutritional value of the foods was determined Much help had also been forthcoming from industry The function of scientists in war-time was not only to satisfy particular needs of Service or civil departments but also to anticipate likely needs The drying of foods, the study of which was taken up by the Food Investigation Board under the chairmanship of Sir **Joseph Barcroft** soon after the outbreak of war, was an example of such anticipation It had been calculated that some three million tons of water were imported annually with our food, so that drying could affect considerable saving in transport, labour and storage Dried foods have been known for a long time but have always been considered much inferior to fresh foods This was rightly so, for little study had been made of the best way to preserve their palatability and nutritional qualities But the progress made in the last few years was bringing us closer to one of our most important aims the provision of the best food for the United Kingdom and our Allies and ultimately the whole world

Mr **Franklin Kidd**, DSc (Low Temperature Research Station), in a paper on the principles and practice of food dehydration, stressed the differences between the old and the new methods of drying Until recently, dried foods were definitely a second best The extension of food preservation just before the war was mainly in the form of refrigeration This was really a form of drying, in that the water, being converted into ice crystals, was in effect removed from the food An elaboration of this was vacuum ice-drying, in which the ice crystals in the frozen food were evaporated off without thawing This process proved very successful but its development in war-time was impracticable, because the bulk of the food was not reduced and manufacture of the requisite industrial plant would have involved much time and labour Further work was therefore confined to the study of other methods of drying and there had emerged several general principles which guide the preparation of satisfactory dried foods For example a preliminary heat treatment is necessary to inactivate the enzymes which will otherwise cause deterioration of the food The final product should be kept in a dry atmosphere, oxidation can be guarded against by the exclusion of air and of catalysts such as metals and by the addition of antoxidants such as sulphite But no method of preparation can produce dried food of good quality from fresh food of poor quality Dr Kidd gave some examples of the saving effected by drying Dried carrots are $\frac{1}{12}$ of the weight and $\frac{1}{18}$ of the volume of fresh carrots Not all foods show this amount of saving but a complete week's ration could be produced whose weight and volume would be about a quarter of that of the equivalent fresh food

MEAT, EGGS AND FISH

Mr E C **Bate-Smith**, PhD (LTRS), read a paper on dried meat and eggs, written in collaboration with Mrs E M Cruickshank, PhD (Dunn Nutritional Laboratory) and Mr J G Sharp, PhD (LTRS) Meat and eggs are valuable mainly for their protein and caloric value rather than for their vitamin content and they also provide highly palatable constituents of the diet In the preparation of these dried foods they were therefore guided mainly by the criterion of palatability, but it was found that the conditions which best preserved this were also those which least affected their nutritive value The best method for meat was found to be the air drying of the coarsely minced meat at about 60° C, and by this method the digestibility and biological value were as good as those of cooked fresh meat Rotary steam drying in a vacuum was also effective provided the temperature was not allowed to rise too much Temperatures above 80° C, for example, destroyed some of the vitamin B_1, and commercial rotary driers destroyed all of it Preliminary work on nicotinic acid and riboflavin indicated that these are also unaffected at the lower temperatures With eggs, it is important to retain the power of reconstitution and only air drying can do this Here too, if the temperature is kept low, as in spray drying, no deterioration of palatability or nutritive quality occurs, on the other hand, band drying, in which low temperatures are also used, results in loss of some of the vitamin activity owing to the lengthiness of the process The palatability of many samples of both meat and eggs have been tested by panels in several parts of the country, and products agreed to be highly palatable are now relatively easy to obtain

Mr G A **Reay**, PhD (Torry Research Station), spoke on the drying of fish Although drying, with or without salting, has been carried out for centuries, this is always accompanied by considerable changes in flavour and palatability Modern methods, which so far have been confined to the drying of lean fish, have produced fish which compare favourably in quality with fresh fish The fish is first cooked and then either roller dried, or better, air-dried on trays The dried product reconstitutes very well and tastes nice Its volume is $\frac{1}{8}$ to $\frac{1}{10}$, and its weight $\frac{1}{6}$ to $\frac{1}{8}$ that of fresh fish As a rule it keeps well but some samples have deteriorated after a few months The problem of storage clearly requires further work

Mr **Nevill Wright** FIC, of New Zealand, appealed for a pooling of the mass of knowledge which must have been gathered by those working on the problems of food drying in many countries —Dr A S CFARLANE

Lister Institute) agreed with Dr Kidd that suspension f the method of vacuum ice-drying during war-time was easonable but emphasised two advantages of this process First products prepared by this means can be reconstituted on the whole better than those prepared by other means, especially is this so with milk and fruit juices Secondly, they have a smaller surface area than, for example, spray-dried foods and consequently are less liable to oxidation Mr D H F CLAYSON, BSc, urged the importance n these days of fuel economy of studying the relative efficiency of various types of drying apparatus —Mr C E SPOONER, MScTech, said that the drying efficiency of many methods now used is in fact very good He suggested that the replacement of oxygen in the storage containers by an inert gas such as nitrogen might improve the keeping qualities of the products —Mr R T COLGATE, DSc, thought that the preparation of dried eggs presented problems similar to those encountered in the preparation of wheat gluten, of which he had had experience This substance preserves its aerating qualities much better when vacuum dried than when dried in the air, the same is probably true of eggs

In their replies Dr KIDD said that experiments are being done on the effect of storing the dried products in inert gases and Dr BATE-SMITH assured Mr Clayson that the question of fuel consumption in the drying process is being studied, though this represents only a small fraction of the total cost of preparation

VEGETABLES

At the afternoon session, with Mr H E COX DSc chairman of the Food Group, in the chair a paper by Mr R J L Allen, PhD Mr J Barker PhD (LTRS), and Mr L W Mapson, PhD (DNL) on dried vegetables was read by Dr ALLEN The three desiderata are retention of colour, retention of maximal nutritive properties and preservation of both during storage Taking cabbage as an example, the procedure is to cut the trimmed cabbage into thick shreds and scald for 2 or 3 minutes in water containing a little sulphite The scalding reduces the quantity of vitamin C but this effect can be minimised by reducing as much as possible the volume of the solution and the time of scalding and by using the same solution for repeated scalds By this means cabbage can be dried so as to contain 70–80% of its original vitamin C If it is then cooked as recommended it will retain some 35% of its vitamin C, a figure which compares favourably with the amount left in the cooked fresh vegetable Carrots and potatoes have also been successfully dried, the process differing only in detail from that used with cabbage Carrots are scalded whole and then sliced With potatoes it is necessary to choose suitable varieties and avoid the presence of iron in order to prevent blackening of the final product These dried vegetables keep well in storage for at least a year

Mr V L S CHARLEY, BSc (Long Ashton Research Station), considered that one of the most important results of these new methods of food preservation would be that vegetables, now grown in such quantity would be saved from wastage, they could then be distributed in the two or three months when there is a shortage He wondered what the attitude of the Ministry of Health would be to the presence of sulphur dioxide in these products and also questioned the need for so much waste in preparing the vegetables before drying he understood that as much as 50% of cabbage and 20% of carrots are so wasted Could not the scalding water, with its vitamin C and mineral salts, be incorporated in some way in the final product ?—Mr T RENDLE, FIC, referred to the commercial preparation of these dried products A considerable amount of work has already been done with pilot plant and a start has been made with plant for large-scale production —Mr B G MCLELLAN, MIChemI, suggested that those concerned in the drying of foodstuffs should get in touch with engineers who would be willing to cooperate fully in the development of methods of large-scale food production It would be of great benefit if the plant were erected in the growing areas and also if small-scale plant could be made available to deal with surplus vegetables from gardens and allotments

Dr ALLEN, in reply, said that with some varieties of cabbage the wastage is much less than 50% and in fact parts ordinarily discarded can often be incorporated in the preparation they may indeed improve both its colour and nutritive value Most of the SO_2 used in the process is eliminated during the later stages of preparation It is difficult to incorporate the water used for scalding because of the high amounts of SO_2 in this —Dr MAPSON, who was responsible for the nutritional part of the investigation described by Dr Allen, pointed out that the principles discovered in this work could readily be applied in domestic working, for example, preservation of the vitamin C by cooking in water in which the inedible vitamin-rich portions had just been boiled In some respects it is easier to preserve this vitamin in the dried vegetables, since bruising and enzyme action which causes loss in fresh vegetables do not occur with the dried products Loss after cooking due to oxidation of the vitamin when the cooked vegetables are kept hot will occur equally with either type, but the ease with which the dried vegetables can be reconstituted and cooked may eliminate the need for the use of the hot plate in canteens

UTILISATION

The last paper of the day, on the utilisation of dried foods was read by SIR JOSEPH BARCROFT Previous speakers had stressed the advantages of the new processes in storage, ease of cooking and so on but he felt that quality was of equal if not greater importance The adoption of drying means that a greater proportion of people will have easily available foods of high quality Some food suppliers may think these products offer unfair competition but only "fresh" foods of poor quality—stale fish and stale milk—will be affected The process of drying has of course other advantages an important one is the avoidance of wasting foods during periods of high production or gluts Seasonal gluts, such as the high yield of milk in early summer, will be easier to deal with than the unpredictable gluts of an exceptionally good yield but even these could be dealt with at any rate partially, by appropriate organisation. Ease of cooking anther feature of dried foods, would considerably affect not only cooking in canteens but also domestic cooking

Squadron-Leader T F MACRAE PhD, spoke of the use of dried foods in RAF canteens They are popular with cooks, catering officers and medical officers They supply a variety of palatable foods which it is otherwise not always possible to obtain and considerably reduce the time and trouble of preparation Tests have shown that meals prepared from dried vegetables provide about twice as much vitamin C as those prepared from fresh vegetables, mainly owing to the difference in the losses during cooking In palatability tests dried cabbage, for example, was taken at least as well as the fresh vegetable

Mr J HAMMOND DSc, FRS (Cambridge School of Agriculture), said that dried foods would affect production, distribution and storage, and consumption Production would be affected by the fact that they would make it possible to deal with gluts There are parts of the world, such as Rhodesia and Northern Australia, which might produce large amounts of meat but which at present cannot be exploited owing to the difficulty of feeding workpeople in these areas this could be overcome by supplying workers with dried foods Dried foods would make distribution much easier and cheaper, they should greatly lessen the difficulties of postwar relief The fact that dried foods can be stored and readily transported means that there can be a more uniform supply of foods throughout the year for people of moderate means

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The meeting did not deal entirely with these theoretical aspects of drying foods Demonstrations showed how rapidly dried cabbage and potatoes could be reconstituted, and samples of dried foods, both as stored and as prepared for eating were on view Minced meat and fishcakes, with cabbage potatoes and carrots were there for members to taste and the general opinion was that it was impossible to guess that they were not ordinary fresh foods

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M Maisky the Soviet ambassador to this country, has given £100 to the Anglo Soviet Medical Council for their future work

Reviews of Books

After-Treatment

H J ATKINS, D M, M Ch Oxfd, F R C S, assistant surgeon to Guy's Hospital, London Oxford Blackwell Pp 266 15*s*

THIS guide for all doctors and nurses who have the care of patients after operations is the more valuable for its emphasis on the human side of treatment and the common-sense approach to problems of convalescence The size is just right, it is not overburdened with unpractical discussions, and the advice given is sound and simply expressed There is little to criticise, but if Mr Atkins would consult Murphy's original writings on the rectal administration of water, he might alter the views expressed on p 11 The rectum should never be called upon to accommodate 5 pints of saline, nor can the surgeon do anything to influence the absorption by the rectal and colonic mucosa, yet if fluid is given by the original method 7–8 pints may be absorbed in comfort by a dehydrated person Surgical opinion is veering away from soaks for septic fingers though there is much to be said for them There is no need to use the noisy Sprengel pump for keeping a patient with a suprapubic opening dry the old-fashioned simple gravity suction pump is as effective Hexamine, recommended as a urinary antiseptic, has been discarded by most urologists The direction to use "half-strength hamamelis solution" for stopping vesical hæmorrhage is ambiguous, and an unusually gloomy picture is presented of the result of hydrocele operations Care of a colostomy is extremely well and carefully detailed The appendices advise about report-writing and the giving of evidence in a court of law The book is one of the best and most attractive on a subject often insufficiently mastered by the newly qualified doctor

Lymphatics, Lymph and Lymphoid Tissue

Their Physiological and Clinical Significance CECIL KENT DRINKER, M D, D Sc, professor of physiology, school of public health, Harvard University, JOSEPH MENDEL YOFFEY, M D, F R C S, senior lecturer in anatomy, University College of South Wales, Cardiff London Humphrey Milford, Oxford University Press Pp 406 22*s* 6*d*

THE physiology of the extravascular circulation and the lymphatic system continues to fascinate experimental physiologists This well-illustrated volume, which is the second Harvard University monograph in medicine and public health, reviews the structure and the experimental and applied physiology of the lymphatic system in mammals Neither physiologist nor clinician will find it too technical The mechanism and control of capillary permeability and the composition of the tissue fluids are considered in detail, and they have never been of greater general interest than in these days of universal chemotherapy with the sulphonamide compounds The influence of the lymphatic system on the spread and control of bacterial and virus diseases and the mechanism by which particles and bacteria gain access to the tissues and lymphatics of mucous and serous membranes are fully discussed, and other topics critically considered are the embryology and evolution of the lymphatic apparatus, the characters of lymphocytes (which incidentally move faster than leucocytes), the relationship of lymphocytes to other cells, the influence of various forms of physiotherapy on the circulation of lymph and, therefore, on the general circulation, and the rôle of the lymphatic apparatus in circulatory disorders such as hypertension, nephrosis, acute inflammation and surgical shock Those who wish to pursue the subject beyond the confines of this book will find the abundant bibliography an asset

Surgery of Modern Warfare

(2nd ed) Editor HAMILTON BAILEY, F R C S Edinburgh E and S Livingstone Vol I Pp 480 40*s*

THE re-issue in two volumes of this now well-known work has given its editor the opportunity of some regrouping The first volume before us is concerned with wounds in general, and with those of the blood-vessels, head, face, spine, chest and abdomen in particular Lack of balance between the various sections has not been entirely adjusted, 30 pages are devoted to the exposure of the main vessels of the limbs—a subject more suited to a book on surgical anatomy—whereas wounds of the thorax are dealt with (albeit admirably) in 20 The sections on injuries of the brain and skull by Mr Norman Dott and on wounds of the face and jaws by Mr Pomfret Kilner are among the best in the book, and both are beautifully illustrated At present, when many young surgeons are being called on to carry out operative work of a type in which they have had little experience, this book will prove a welcome guide

Surgery of Head and Neck

ARTHUR S MCQUILLAN, M D, F A C S, clinical professor of surgery, New York University Medical College London Humphrey Milford, Oxford University Press (Medical Outline Series) Pp 138 12*s* 6*d*

THIS book covers general surgery in outline In his preface, Professor McQuillan states his wish that it may "prove worth while as an aid to the undergraduate student, the interne and the practising surgeon" We feel doubtful about the value of any sort of medical outline for the student, who should gradually attain knowledge of his subject and not stuff himself with facts and figures No stress is laid on general principles, even in the discussion of tuberculous disease of the cervical spine But for the hospital resident and practising surgeon the book may serve a useful purpose despite the excessive, and not always orderly, tabulation. The general arrangement is satisfactory and on the whole the facts given are reliable and up to date, although epulis is listed among malignant tumours of the gums and jaws, and under brachial plexus injuries only the lower-arm type of paralysis is mentioned

Pediatric Gynecology

GOODRICH C SCHAUFFLER, M D, assistant clinical professor of obstetrics and gynecology, University of Oregon medical school Chicago Year Book Publishers, London H K Lewis Pp 384 27*s* 6*d*

THIS well-illustrated book is, as Professor Schauffler claims, a pioneer work on subjects which have apparently never been grouped together before He does not aim at being exhaustive on all diseases peculiar to the female child, but has selected those which in his experience and that of his colleagues present special difficulties in diagnosis and treatment Pyelitis and enuresis are discussed fully and British urologists will welcome the observation that minor developmental abnormalities are often found associated with recurrent attacks of pyelitis He considers that only 5–10% of enuretic patients can be shown to have an organic lesion The ætiology, diagnosis and treatment of pelvic peritonitis are thoroughly discussed and a section on the vexed question of vulvovaginitis deals fully with treatment It seems that American workers have been disappointed with sulphonamides given by mouth Endocrine deficiency and associated genital undevelopment are discussed and should stimulate research in a field that has hitherto been somewhat neglected here The last chapter, on the social service aspects of pædiatric gynæcology, deals with the practice of American law, but its principles are of wider application

Sanitary Inspector's Handbook

(5th ed) HENRY H CLAY, F R San I, F I S E, major R A M C London H K Lewis Pp 534 18*s*

THE original sanitary inspectors were inspectors of nuisances, their work was not specialised and they were generally untrained Later they became lay assistants to medical officers of health to do what they were told to do without needing much special erudition The advance of public health led to their work becoming highly specialised, partly divorced from that of other technicians in the service, and calling for experts of a new type, highly trained and capable of bearing responsibility Textbooks were therefore needed by students for the qualifying examination, by practitioners for reference The need was poorly filled until Mr Henry Clay brought out his handbook in 1933, it was a big book and has increased in size with each edition, but it contains nothing superfluous What is to be known is put concisely by an expert of long and varied experience who is an examiner of standing and whose writing is neither vague nor dictatorial The popularity of Clay is therefore not surprising

THE LANCET

LONDON SATURDAY, AUGUST 15, 1942

PRACTITIONER AND PATHOLOGIST

The medical student spends a good deal of time in learning how laboratory examinations of the blood, tissues and body-secretions help in the diagnosis of disease When he goes into practice, he soon discovers that if he wants laboratory tests done he must either call out an expensive consultant or send his patient to the outpatient department of a hospital, whence, too often, there is no return True he may send throat-swab or sputum or even blood and fæces to the public-health laboratory for help in the diagnosis of infectious diseases like diphtheria, tuberculosis and typhoid, but these infections form a small part of his practice, and so the practitioner soon forgets much of what he had learned about laboratory aids to diagnosis What he needs is a diagnostic centre to which he can send or take his patient for a blood-count, gastric analysis or renal-function test, and where he himself can get expert advice from the pathologist for a nominal fee In this way he keeps his patient, and learns much medicine A service along these lines has for some time been working satisfactorily in Kent where the cost of the laboratory work is a charge on the county rate [1]

In hospital the clinician, from houseman to honorary, is too apt to regard the pathologist as the servant of his craft, and to demand of him all manner of tests which may or may not be essential to diagnosis or treatment This overdependence on the ancillary aids to diagnosis—and the X-ray department suffers as much as the laboratory—may, if carried too far, lead to a decay in the practice of sound clinical medicine which attempts first to establish the diagnosis by interrogation, observation and physical examination Perhaps the clinician is not sufficiently versed in the uses and significance of modern laboratory tests [2], he must not cloak his ignorance by asking for a whole series of examinations which may add little to diagnosis and will certainly absorb much time and energy in the laboratory Closer liaison is needed between the ward and the laboratory, with more frequent bedside and telephone discussions between clinician and pathologist about the nature of the case and the laboratory tests which are most likely to be helpful The pathologist naturally gets exasperated if the clinician regards the laboratory merely as a machine for turning out reports And now that increasing shortage of staff means curtailment of work it is more important still to eliminate unessential tests Examples of the avoidable are complete blood-counts on patients with no clinical signs of anæmia in case of doubt a simple hæmoglobin estimation is enough Blood-sugar curves are not required—but are often requested—in confirmed diabetes Fractional test meals are seldom necessary examination of the fasting juice after a charcoal biscuit the previous evening will usually give all the needed information Another grievance is that patients who are readmitted or transferred to another hospital must have a new set of laboratory tests done when the telephone or a polite note would elicit the collected data without further trouble to patient or pathologist Housemen have to pander to the foibles of the honorary, and on the day before the big visit they flood the laboratory with requests for examinations which might "interest the Chief," but will add nothing positive to the diagnosis

Let it be more widely recognised that the pathologist is not a technician but is as a rule a man with a wide and accurate knowledge of medicine which he is glad to put at the disposal of his clinical colleagues Let there be an end to the spirit of armed neutrality which sometimes exists between ward and laboratory and let us have in its place a friendly partnership which will bring benefit all round Such a partnership can best be achieved by including a period of laboratory work in the training of the resident medical officer, so that later on he will properly appreciate the place and function of clinical pathology vis-à-vis clinical medicine In this we can learn much from our American cousins

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[1] Ponder C *Lancet* 1941, ii 582

[2] If so he should read Biochemistry of Disease" by Meyer and Oscar Bodansky New York and London Macmillan 1940 Pp 684

PENICILLIN PURIFIED

In the last two years Chain, Florey and their colleagues [1] [2] in Oxford demonstrated that a partially purified preparation of penicillin, a substance first produced from the mould *Penicillium notatum* by Fleming [3] in 1929, possesses remarkable antibacterial activity against certain organisms and with its low toxicity has therapeutic possibilities The penicillin preparation first used for therapeutic trials on man inhibited the growth of a number of gram-positive bacteria at a dilution of 1 1,000,000 Yet it could be injected intravenously into mice in substantial doses without producing ill effects and could be successfully given by the same route in the treatment of bacterial infections in man A considerable further purification of penicillin has now been reported by Abraham and Chain [4] and the biological properties of the new product have been studied by Florey and Jennings [5] Its antibacterial activity is much greater than that previously obtained, the new preparation inhibiting the growth of staphylococci completely at the astonishing dilution of 1 25,000,000 and partially at a dilution of 1 160,000,000 Other gram-positive bacteria, though not tested with the purest penicillin, which is scarce, are also inhibited at high dilutions As Fleming showed, the gram-negative organisms are less sensitive to penicillin than the gram-positive ones However, a preparation of penicillin only half as pure as the best obtained has been found to inhibit the growth of *Salmonella typhi* and *S gaertneri* at a dilution of 1 30,000 and to have some effect at 1 120,000 Toxicity might have been expected to increase with antibacterial activity, but in fact the toxicity of the highly purified preparation is less than that of the earlier partially purified ones A dose of 20 mg of a penicillin preparation with half the antibacterial activity of the purest obtained had no apparent effect when injected intravenously into a 20 gramme mouse

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[1] Chain E, Florey, H W, Gardner A D Heatley, N G, Jennings, M A, Orr Ewing, J and Sanders, A G *Lancet*, 1940, ii, 226

[2] Abraham, E P et al *Ibid* 1941, ii 177

[3] Fleming, A *Brit J exp Path* 1929 10, 226

[4] Abraham, E P and Chain, E *Ibid*, 1942 23, 103

[5] Florey, H W and Jennings, M A *Ibid*, p 120

This is a dose of at least 5000 " Oxford units," [6] and the effective therapeutic dose used in experiments on mice was 5–10 units subcutaneously at three-hourly intervals These figures give some idea of the great latitude between an effective therapeutic dose and one which a mouse will tolerate without toxic symptoms A dose of 10,000 units in the form of a much cruder preparation given to a man produced well-marked bacterial inhibition in his blood for at least an hour Other evidence of low toxicity was that human polymorph leucocytes survived for an hour in a 1% solution of purified material In view of the very low toxicity of penicillin it may be possible to maintain concentrations in the tissues which will bring at least some of the gram-negative organisms within its therapeutic reach

Purified penicillin is a chemotherapeutic agent even more remarkable than the studies of the partially purified product foreshadowed It is almost equally active against many gram-positive organisms It is many hundred times as active as the sulphonamides and at the same time less toxic than the least toxic of those drugs Its antibacterial activity is not affected by tissue constituents, or within wide limits by the number of bacteria present It has been shown to be active against sulphonamide-resistant streptococci,[5] a property which promises to be of great value Lately a number of antibacterial substances of various chemical constitutions have been isolated from fungi and bacteria (gramicidin and tyrocidin,[7] actinomycin,[8] citrinin,[9] penicillic acid,[10] streptothricin,[11] gliotoxin,[12] proactinomycin [13]) The available evidence suggests that these substances will prove to be many times more toxic than penicillin and it remains to be seen whether any of them will stand the test as clinical chemotherapeutic agents

Though penicillin has been purified to a high degree **Abraham** and **Chain** have not yet obtained it in a crystalline form, and it is therefore not certain that their purest preparation possesses the highest possible degree of purity From the analytical figures of the purest penicillin preparation, formulæ such as $C_{21}H_{32}O_{10}N_2Ba$ and $C_{23}H_{30}O_9N_2Ba$ have been suggested [14] The nitrogen content of penicillin is remarkable since nearly all substances hitherto isolated from fungi have been nitrogen-free The tentative formulæ of penicillin, with data obtained by spectrophotometric analysis,[15] suggest that several condensed hydroaromatic ring systems are present in the molecule Obviously penicillin is a complex molecule, and its instability towards acids, alkalis, heavy metals and many other chemical reagents makes the task of elucidating its chemical structure more than usually difficult, so that the prospect of synthesis still seems remote For the time being at least it will be necessary to rely on production by the mould, but in view of its potentialities methods for producing penicillin on a large scale should be developed as quickly as possible

PÆDIATRIC PLANNING

Among the 21 classical references to the child, thought to be worthy of inclusion in *Familiar Quotations*, there is only one which relates him to the adult—Wordsworth's " The Child is father of the Man " He may be curious or simple (Wordsworth again), or naked (Wm Jones), or happy (Ann Taylor), or tired (Shelley), or thankless (King Lear) He may be the object of yearning (King John), or of prayer (Longfellow), the embodiment of misery (Langhorne), or of suffering (Holmes) He may have a heart appropriate to the last roll-call (The Newcomes) and a speech remembered by St Paul, but it has been left to medicine to regard him as only a smaller edition of his parents and showing the same morbidities in lesser degree In London there is no professorial chair of pædiatrics and in the last prewar year seven provincial universities only allotted 5½*d* out of each £100 of their grant money to the special teaching of child health But a new outlook dates from the foundation in 1928 of the British Pædiatric Association, and at its fourteenth annual meeting held at Windermere in May under the presidency of Prof L G **Parsons** the more recondite problems of disease in childhood were laid aside in favour of a wide discussion of pædiatric planning This association of consulting pædiatricians and university teachers of pædiatrics in the British Isles has developed from an academic club into an advisory and executive body willing to bear the increasing responsibilities facing it

Conference turned on three main branches of pædiatrics domestic practice, public pædiatric services (such as child welfare and school medical services), and the hospital and institutional treatment of children After the war domestic practice will presumably remain largely in the hands of general practitioners or members of group practices specially interested and trained in children's diseases Obviously therefore the standard of undergraduate training in pædiatrics should be raised, encouragement being given by the simple expedient of questions at the final professional examination, and/or a period of postgraduate service in a children's unit required of all who aspire to treat the young The establishment of university centres, adequately staffed with both whole-time and part time pædiatricians, is the logical means not only of raising the general level of pædiatric education, but of providing consulting centres and special training At present it appears that less than 10 per cent of those engaged in child welfare and school medicine have held resident posts in children's hospitals Overseas pædiatricians find it hard to believe as we find it to explain that there is no special chair in London, and only one in the rest of *England, although both Edinburgh and* Glasgow have established units To find an example of how such university centres, concerned with child health and with disease in childhood, may form a liaison between practitioners, public health workers, consultants, and research workers, one must go (if one could) to Gothenburg The problems will need handling differently in the London area and in the Provinces Thus whilst provincial medical schools would naturally have a single pædiatric unit in the shape of a children's hospital in close liaison with the ancillary services of the university and the local public health authority, in London there are numerous special hospitals while each teaching hospital has its own children's unit The number of local authority areas from which patients are drawn in Greater London alone is formidable Much of the overlapping and duplication that now exist will have to be eliminated , each medical school might adopt an existing children's hospital as its teaching unit, other children's hospitals serving as centres for postgraduate teaching Of equal importance for the future of pædiatrics is a high standard of training for children's nurses , it would be lamentable if the idea prevailed that a nurse with general training who has had one or two months in a children's ward is therefore competent to become a sister in a children's ward, and it would be a retrograde step for the General Nursing Council (as has been suggested) to abolish the register of sick children's nurses

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[6] An Oxford unit is that amount of penicillin which when dissolved in 50 ml of meat extract broth just inhibits completely the growth of the test strain of *Staphylococcus aureus*

[7] Dubos, R and Hotchkiss, R *J biol Chem* 1941, **141**, 155

[8] Waksman, S A and Woodruff, H B *J Bact* 1940, **40**, 581, *Proc Soc exp Biol N Y* 1940, **45**, 609, *J Bact* 1941, **42**, 231

[9] Raistrick, H and Smith, G *Chem and Ind* 1941, **60**, 828

[10] Oxford, A E, Raistrick, H and Smith, G *Ibid*, 1942, **61**, 22

[11] Waksman, S A, Woodruff, H B *Proc Soc exp Biol N Y* 1942, **49**, 207

[12] Weindling, R, Emerson, O H *Phytopathology*, 1936, **26**, 1068

[13] Gardner, A D and Chain, E *Brit J exp Path* 1942, **23**, 123

[14] Abraham, E P et al *Nature, Lond* 1942, **149**, 356

[15] Holiday, E R *Brit. J exp Path.* 1942, **23**, 115.

Regional planning offers scope greater perhaps in pædiatrics than in any other specialty At present few towns possess even one highly trained children's specialist, and in many areas none but the well-to-do can obtain competent pædiatric advice The wide establishment of consulting centres for practitioners, staffed by visiting pædiatricians on a regional basis, would not only raise the standard of children's practice, but also provide expert advice for welfare workers and school medical officers The strictly consultant status of the centres would not infringe the province of either the public or private practitioner Their value has already been proved in the case of orthopædics, and pædiatric centres are more than ever needed in view of the large-scale evacuation of children to rural areas The EMS provides the basis of a skeleton scheme which could be expanded rapidly Unfortunately pædiatric planning for the postwar years is overshadowed by the more immediate sequelæ of war The probable increase in tuberculous infection during childhood, the almost certain increase in juvenile delinquency consequent on evacuation and broken homes, and the possibility of a serious lowering of nutritional standards, all call for immediate consideration It is a hopeful sign that nutritional problems are being realistically faced by the provision of communal feeding in schools, and in many places schoolchildren are being taught to grow as well as to cook and serve much of their own food That the value of the midday meal at school, both to themselves and their parents, is appreciated by many children has already been shown by one enterprising county education committee[1] The memory of conditions that prevailed in Europe at the close of the last war should suffice to put pædiatric planning on the map

AZOTÆMIA AFTER ALIMENTARY BLEEDING

IT is a commonplace of present-day clinical biochemistry that a raised blood-urea can be considered as unequivocal evidence of organic kidney disease only after care has been taken to exclude various so called extrarenal causes of azotæmia The list of diseases in which extrarenal uræmia may be found is a long and growing one , it includes diabetic coma, pneumonia, gastro-enteritis, Weil's disease, acute yellow atrophy of the liver, Addison's disease and hæmatemesis In the excitement of discovering more and more diseases in which the blood-urea was high and soaring, while the kidneys in fatal cases were no more than cloudily swollen, or perhaps even fattily degenerated, the question of the actual causes of the raised blood-urea was often either tacitly set aside or decently avoided by the use of imported catch-phrases such as *azotémie par manque de sel*, or *Produktionsurämie* The published work is full of wise (but unproven) saws, and modern (but repetitive) instances The early stages when it was profitable to amass data on large numbers of patients have passed and the future seems to lie with detailed investigations on selected cases—a type of research for which the work of **McCANCE** and **WIDDOWSON**[1] on diabetic coma may serve as a model

In harvesting the biochemical lore of extrarenal azotæmia, many workers have applied themselves to hæmatemesis, perhaps because of its frequency, or because of the interest stimulated by **MEULENGRACHT'S** claims for the advantages of liberal feeding As a result, although the raised blood-urea in hæmatemesis was first described by **SANGUINETTI**[2] in 1933, sufficient material has accumulated in the past decade to justify review **BLACK**[3] has described the clinical and biochemical characteristics of this type of azotæmia The special feature which separates it from other types of azotæmia is the presence of a large amount of blood in the bowel , that this is an important source of urea has been shown by **SCHIFF** and others[4] in normal people, and by **BLACK** and **LEESE**[5] in patients with gastro duodenal hæmorrhage In addition to an increased absorption of nitrogen from the bowel there is the possibility of an increased katabolism of the tissue protein Direct evidence of this is hard to obtain, for the blood in the bowel, acting as an indefinitely large source of urea, precludes the classical evidence of tissue-protein breakdown which would be afforded by a negative nitrogen balance , but **BLACK'S** view is that there is sufficient disturbance of the internal milieu of the body by water and salt deficiency, and by circulatory impairment, to accelerate protein katabolism significantly Over-production of urea cannot be the whole story, however, for a normal person may be given much larger amounts of urea than are likely to be formed in patients with hæmatemesis without raising his blood-urea more than a very little—in other words, a normal cardiorenal system can deal with very large increases in urea production without any azotæmia developing Terminological custom has exonerated the kidneys in the phrase extrarenal uræmia , but the facts are ineluctable, and a profound fall in urea, inulin and diodone clearance shows that failure of kidney function is of critical importance in determining the rise of blood-urea **HOMER SMITH** regards inulin clearance as a measure of glomerular filtration, and diodone clearance as measuring effective renal plasma flow , if this interpretation is valid in patients with hæmatemesis, diminished circulation to the kidneys is sufficient to account for their functional inadequacy Other types of azotæmia may have a different basis , the question can only be answered by a wider application of balance experiments and modern renal-function tests

The precise ætiology of a raised blood-urea in hæmatemesis is of less interest to the clinician than its value in prognosis and treatment Most of those who have studied the subject agree with Witts[6] that the height of the rise is closely correlated with the severity of the hæmorrhage, and that a blood-urea of more than 100 mg per 100 c cm constitutes one of the indications for slow drip blood-transfusion Black outlines the considerations which govern the amount of blood to be given, a litre of citrated blood, given by slow drip, is often a suitable amount, but much larger quantities may be required in severe or repeated hæmorrhage In maintaining fluid balance there is much to support the free fluid intake which is probably the chief advantage of the Meulengracht diet, but most physicians will follow Hurst[7] in shunning its major eccentricities, such as broiled chops, timbale and tapioca pudding

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[1] *Lancet* July 18, p 72

[1] McCance R A and Widdowson E M *J Physiol* 1939 95 36
[2] Sanguinetti L V *Arch argent Enferm Apar digest* 1933 9 68
[3] Black D A K *Quart J Med* 1942 11 77
[4] Schiff L et al *Amer J digest Dis* 1939 6 597
[5] Black, D A K and Leese, A *Quart J Med* 1940, 9 129

Annotations

ENEMY ACTION AND MORTALITY

Prof M Greenwood, lecturing at the London School of Hygiene on July 16, contrasted the civilian mortality (necessarily among females only) which could be regarded as an excess above the normal peace time level in the first two years of the last war and the corresponding period of the present one In 1915–16 direct enemy action against civilians was not, of course, of material importance, and the number of deaths from violence differed negligibly from the 1914 figures One indirect effect of enemy action was the death of 1200 females from cerebrospinal fever—a relatively great increase from the 350 expected at the rates of 1914, absolutely, however, this was an unimportant cause of death The main excess of 1915–16 was in tuberculosis which with 24,000 deaths in each year produced an excess of about 3000 deaths or about 7% above the peace-time level He thought it not far from the truth to say that in those years the war-time tax on female life was paid in tuberculosis In the last two years things have run a comparable course, except that direct enemy action has played a much larger part The indirect effects of total war on health however (in so far as they can be measured by mortality), may have been rather less serious than those experienced by the previous generation In 1937–39 deaths of females from cerebrospinal fever were less than 300 per annum, in 1940 and 1941 they were roughly 1000 each year The disease was much more prevalent in the civilian population in 1940–41 than in 1915–16 but chemotherapy had reduced its killing power It still remains absolutely a not very important cause of death and its epidemiological history suggests no reason why it should take a major position The least reassuring feature of today is again, in Professor Greenwood's view, the debit account of tuberculosis The annual deaths from 1937 to 1941 have run 12,283, 11,052, 10,692, 11,843, 12,032 The actual toll has not been spectacular but there is clearly a testing here of our defences against an ancient and powerful enemy In the first year of the war young adults suffered most, in the second year children Again the increases at these ages can be measured in terms of a few hundred deaths, but if the war, as we are assured, must be long, those few hundreds are enough to give rise to some uneasiness Lastly we have direct enemy action, so far the largest debit item Methods hardly available in 1915–16 killed some 20,000 females in 1940–41, an addition of 4–5% to the death-rate of the prewar years Perhaps that is not very much in relation to the weight of the enemy's attack, perhaps bombing may be an expensive way of killing or frightening people That indeed may be partly the basis of Prof A V Hill's beliefs, which Professor Greenwood quoted, that "the idea of bombing a well defended enemy into submission or seriously affecting his morale, or even doing substantial damage to him is an illusion" Arithmetic must, of course, be the only accurate way of assessing the effects of bombing But one would wish to *see* the arithmetic before deciding what it demonstrates

FOOD WITHOUT WATER

In peace time, according to an estimate quoted by Sir Edward Appleton at the meeting at BMA House reported on another page, we import 3,000,000 tons of water a year in our foodstuffs Some of this waste of shipping space is already being saved by the increasing use of dried foods—most of us have lately drawn our ration of American dried eggs, for example—but when the new knowledge on drying is fully applied we may see all the food we need coming in without its water On vegetables, fruit and such the saving is enormous, but drying will reduce the bulk and weight of an average complete diet by about three quarters Apart from saving on transport, drying makes it possible to keep foods without refrigeration, so that gluts, whether seasonal or fortuitous, can be made to supply us in periods of shortage Dried milk, eggs, fruit and salted fish have for a long time been regular articles of commerce, and a large amount of vegetables were dried in the last war, though most of their antiscorbutic value was lost in the process Dried meat, too, in the form of pemmican and biltong, has long been familiar *in places where the butcher never calls* But up to the present the quality of dried meat, fish, eggs and vegetables has not been good enough for them to take the place of the fresh articles for general consumption, and little has been known about the factors influencing their palatability, keeping quality and nutritive value When this war began the Food Investigation Board of the Department of Scientific and Industrial Research, under the chairmanship of Sir Joseph Barcroft, turned its attention to these problems, among others, and they have largely been solved, thanks to the organisation of Mr Eric Barnard, Director of Food Investigation, the technical researches carried out at the Low Temperature Research Station under Dr Franklin Kidd and at Torry Research Station, and the work of Dr Leslie Harris and his colleagues at the Dunn Nutritional Laboratory to ensure the dietetic soundness of the new foods The dehydrated foods now being produced are more compact and convenient to use, particularly under service conditions, and their nutritional stability may be even greater than that of fresh foods, for the dehydrating process removes vitamin inactivating oxidases In flavour, appearance and nutritional value, when they are reconstituted and cooked, they will not be inferior to the cooked fresh foods—a triumph for scientific cooperation between the food technologists, official and commercial, and the nutritional research workers

MICROCRYSTALS OF SULPHATHIAZOLE

In the local chemotherapy of wounds and burns sulphanilamide has been the drug most used, on account of its solubility and ready availability Sulphathiazole has the advantage of activity against a wider range of bacteria, but the disadvantage of slow solution and absorption, so that if excess is applied it may subsequently interfere with wound healing as a foreign body Chambers and his colleagues[1] of Philadelphia describe the preparation of "microcrystals" of sulphathiazole by the neutralisation of a solution of the sodium salt at a low temperature, the reacting mixture being kept in violent agitation by sound vibration or some other high speed mixing device No details of this process are given A 20% suspension has the consistency of thick cream, and shows little tendency to settle out The drug was more rapidly absorbed from such a suspension introduced into rabbits intraperitoneally or intramuscularly than from a similar suspension prepared from the usual crystalline form of the drug. The microcrystals have been employed in fresh wounds, skin infections, burns and abdominal operations with gratifying results in a small series of cases both as a powder for dusting superficial wounds and as a 10% or 20% suspension, which may be injected through 26-gauge needles Chambers and his colleagues emphasise, as do Colebrook and Francis[2] for sulphanilamide, that the drug should not be dumped on the wound but dusted on the surface in a thin layer In one case, in spite of a large burned area, the blood sulphathiazole was never more than a trace This is very different from the experience of Hooker and Lam,[3] who record cases where the local application of sulphanilamide powder to burns resulted in high blood levels, in one case 33 mg per 100 c cm , with unpleasant side effects The powder and suspension were not sterilised, presumably because the application of moist heat would cause reversion to the macrocrystal, as happens with sulphanilamide powder, but no infections were attributed to its use The recent case of tetanus following the insertion into the peritoneal cavity of unsterilised sulphapyridine powder[4] has drawn attention to this possibility Microcrystals prepared by the addition of acid to the strongly alkaline sodium salt solution would not seem to be a likely source of serious infection, if reasonable precautions against contamination are taken during and after its preparation

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[6] Witts, L J *Brit med J* 1937, i, 817

[7] Hurst, A F *Lancet*, June 20, 1942, p 750

[1] Chambers, L A, Harris T N Schumann, I and Ferguson L K *J Amer med Ass* 1942, 119 334

AN ŒSTROGEN WITH A LONG ACTION BY MOUTH

IN searching for an œstrogen with a long-lasting effect when given by mouth, Robson and Schönberg[5] have examined a large number of substances including derivatives of triphenylethylene They point out that the discovery of the synthetic œstrogens placed at our disposal compounds with the great advantage of being highly active when given by mouth and that while among these stilbœstrol has been most widely used and has proved of the greatest value, it has only a short period of action so that it may have to be given at short intervals to produce a sustained effect The whole subject of the relative clinical effectiveness of œstrogens, and particularly the way in which this is influenced by the mode of administration—whether parenteral, oral, percutaneous or by implantation—has lately been reviewed by Greene[6] Robson and Schönberg have meantime obtained one new compound $\alpha\alpha$-di-(p-ethoxyphenyl)β-phenylbromoethylene (DBE) which they regard as promising, and they have compared the duration of œstrogenic action of various dosage-levels of this substance and certain other œstrogens when administered subcutaneously or by mouth The activity was determined on groups of ovariectomised mice by a method previously described for estimating the intensity of the vaginal œstrous response,[7] the measure of duration being the period until action is halved in days While DBE on subcutaneous injection was found to have a relatively high threshold further increase in dose produced a decided prolongation in its action an effect which is likened to the behaviour of the di esters of œstradiol The oral threshold of DBE proved to be similar to that of œstradiol and very much higher than that of stilbœstrol but increase of dosage resulted for DBE, in a somewhat greater increase in the duration of action Robson and Schönberg suggest that, after absorption from the alimentary canal, DBE is stored in the body and slowly released They are inquiring further into this possible explanation of its long-lasting effect and it will be interesting to know the behaviour of DBE in the type of experiment devised by Emmens[8] whereby he found that various synthetic compounds (the "pro-œstrogens" as distinct, for example, from the natural œstrogens and many compounds of the stilbœstrol series) have to be absorbed into the circulation and subsequently undergo metabolic changes to true œstrogens It remains to be seen how exceptional is the prolongation of effect shown by DBE and whether it is of special practical value in view of the powerful agents already available

TUBERCLE IN THE WORKING MAN

OUR tuberculosis service, worthy of respect in many ways breaks down in some important particulars Thus most cases with a favourable prognosis are sent to a sanatorium for 3–6 months as soon as the disease is diagnosed, and in most places treatment is given without charge to the patient, though the actual cost may amount to as much as £5 a week per bed When the patient returns to his home, however, for convalescence and rehabilitation no such generous provison is made for him , indeed, as the Socialist Medical Association point out, in a report revised since last year,[9] the scale changes from optimum to minimum If he has been incapacitated for more than 6 months his National Health Insurance benefit will have fallen to 10s 6*d* a week, and this with extra nourishment supplied in kind (and not as a right) by the local authority is all he has in place of his previous wage—unless he likes to apply for public assistance He may feel it humiliating to make such application , moreover, public assistance rates vary with the district, thus in a poor area where cases may be numerous, the funds to meet them are low, and assistance is likely to be on an inadequate scale In 1940 F R G Heaf and Lloyd Rusby calculated that a tuberculous person could only just manage on 19*s* worth of food a week if he was to be adequately fed ; Prof J R Marrack put the figure at 17*s* , but even so it was well beyond the patient's means and prices have risen since then Nor is this the only disaster the patient generally shares his home—probably a small and crowded home—with his wife and family As a rule his wife probably has to go out to work to augment the family income and the patient is thus left to take charge of the children who, lacking the protection of an ample diet, are likely candidates for infection

The association remind us of the close correlation between war industry, long hours of work and tuberculosis The present war is only driving home what we learned from the last, and tuberculosis is as usual providing a barometer of social conditions Thus the prewar steady decline in mortality has been converted into a rise in the twelve months July, 1940, to June, 1941, about 3000 more people died of tuberculosis in England and Wales and about 600 more in Scotland than in the corresponding period in 1938–39 The reasons are evident industrial life favours the development and spread of tuberculosis especially when the blackout interferes with ventilation , fatigue due to long hours of work transport-difficulties, and restrictions of diet add to the hazards It is true that unemployment is no longer an important cause of defective nutrition, but for the wage earning community as a whole, the association maintains, only about two-thirds of the increased cost of living has been met by increased income that those who have managed to increase their purchasing power have only done so by working overtime Hours in the factory in excess of 60 a week lead to absenteeism from sickness and to a fall in production, as the Industrial Health Research Board has demonstrated again and again , and among causes of

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[2] Colebrook L and Francis A E *Lancet* 1941 i 271
[3] Hooker D H and Lam C R *Surgery St Louis* 1941 9 534
[4] See *Lancet* June 27 1942 p 770
[5] Robson J M and Schönberg A *Nature Lond* 1942 150 22
[6] Greene R R *Med Clin N Amer* 1941 25, 155 *Surg Gynec Obstet* 1942 74 595
[7] Robson, J M *Quart J exp Physiol* 1938 28 195

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[8] Emmens C W *J Endocrinol* 1941 2 444
[9] The War Tuberculosis and the Workers 2nd ed Pp 12 From the SMA 33 Murray Road, Northwood, Msx 4*d*

absenteeism is tuberculosis If early cases could be removed from industry while they were still easily curable and before they had infected their fellows, the death-rate from the disease could be cut down, even in wartime The association quote the findings of Dr Laszlo Banszky in a factory near London between 1936 and 1941. Routine X ray examination of 10,000 new entrants revealed active tuberculosis in 1–1 5% Among those actually employed the incidence fell rapidly after the scheme based on these findings had been in action for a few years Indeed miniature radiography offers the perfect method of detecting, among those entering industry, the early case for whom industrial work will mean danger to himself and others Unfortunately organised industrial workers are opposed to its routine use—nor is it difficult to see why a diagnosis of tuberculous disease means, for the worker, social and economic disaster If his financial position was safeguarded and his restoration to health and to suitable work systematically undertaken, the worker would welcome early treatment as much as anyone else As things are he naturally conceals his disability as long as his strength allows

The association suggest that tuberculosis should be placed in a special category under National Health Insurance and that a cash allowance should be made, sufficient to provide the relatively high standard of living the tuberculous patient and his family need They propose that notification should entitle the patient to receive full NHI benefit for a year At the end of that time his case and that of his family contacts would be reviewed by the tuberculous officer perhaps in consultation with another physician or with a local board He might already be back at work, if not, his capacity for light work would be considered by the tuberculosis officer and the Ministry of Labour representative, and further financial benefit would be granted according to his state Where domiciliary treatment has been given by a general practitioner presumably he would be included in this consultation Disabled patients might at this stage become eligible for a permanent rate of benefit either comparable with that received by tuberculous men discharged from the Forces or equal to their former wage No doubt such a scheme would need careful planning, but the need for some provision of the kind is driven home by the main argument of the pamphlet that the period of impoverishment at present inevitable between discharge from sanatorium and return to work is blocking the way of early discovery and treatment of tuberculosis in industrial workers

TISSUE EXTRACTS AND WOUND HEALING

WORKERS in Jerusalem[1] have lately demonstrated the stimulation of epithelial cell multiplication in vitro by means of heterologous adult tissue extracts, and they promise a paper shortly on the results of clinical trials of such extracts on wound healing In assessing clinical value it is to be hoped that they will bear in mind the difficulty of comparing things that are not comparable —namely, wounds different in situation and nature in different individuals and caused by different agents Experiments on animals such as those of Dann, Glucksmann and Tansley[2] would perhaps give more valuable results On theoretical grounds there is no reason to suppose that an agent which promotes cell proliferation in vitro will also promote wound healing in vivo Here again is a comparison of things that are not comparable In the case of cell multiplication in vitro a change in rate or number of cell divisions is being observed, more mitotic or amitotic divisions occur in response to the addition to the culture of one substance than to ano In the case of wound healing it was shown as long as 1898 by Loeb[3] that epithelial healing occurs by sl of cells from the edge of the wound over the bare surface the mitotic activity is in the back areas at some dist from the bare surface Thus what is being observed a rate of sliding This probably depends as much the nature of the base of the ulcer, the looseness of surrounding epithelial connexions and capacity to stretched as on distant mitotic activity Loeb's o vations have been amply confirmed in the years betw and the whole subject reviewed by Arey[4] in 1936 S then Wigglesworth[5] has demonstrated the same phe menon, with great ingenuity, in insects and has sug that the immediate stimulus for the cell division w occurs at a distance from the wound is a cell sca resulting from the slide A macroscopically v demonstration that a slide does in fact take place provided in corneal healing in those animals and in which pigment is present in the corneoscleral junc After a lesion of corneal epithelium which is exte or approaches the junction without actually touching the pigment line breaks and two pigmented limbs mo gradually down or across the injured surface of cornea As they progress from day to day the s ceases to be stainable with fluorescein, an indic familiar to ophthalmologists that healing has taken place If sections are made of the recently covered area, pigmented cells and some mucous glands derived from the conjunctiva will be found in the new covering of epithelium In a simple corneal ulcer healing is very rapid Bacterial infection and œdema from any cause delay it

TRYPTOPHANE DEFICIENCY

TRYPTOPHANE was isolated by Hopkins and Cole[7] in 1901, and soon after that it was recognised to be in all probability an essential amino-acid As such, a specific syndrome might have been anticipated from its deficiency, but this was not described for some time owing to the difficulty of providing diets which were deficient in tryptophane but perfect in all other respects. Albanese and Buschke[8] have now shown that young rats which have been nourished on a diet poor in tryptophane develop cataracts, vascularisation of the cornea, alopecia, defects in the enamel of the incisor teeth, and (if male) atrophy of the testis and aspermiogenesis. Adult animals do not develop the cataracts or the defects in the incisor teeth It is apparent that continuously growing epithelial structures bear the brunt of this deficiency, but in the opinion of these two observers the lesions are not confined to those tissues, for there is also a retardation of growth and a loss of skin turgor The similarity of the ocular changes to those produced by a riboflavin deficiency is interesting An editori article in the same number of *Science* suggests that sin cereal proteins contain considerably less tryptopha than animal proteins it is dangerous to rely solely o cereals as the source of amino acids in human diets—might be done in a postwar world faced with grave shortages of other kinds of food This may be so, bu humans have a much lower rate of metabolism than rat and even the most unbalanced human diet is likel to contain sources of protein other than the cereal The importance of Albanese and Buschke's findings i human nutrition has yet to be proved If and when it i there will be one more reason for seeing that everyon rich and poor, native and European—gets a sufficienc of animal protein

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[1] Doljanski, L , Hoffman, R S and Tenenbaum, E *Nature Lond* 1942, 150 23

[2] Dann, L Glucksmann, A and Tansley, K *Brit J exp Path* 1941, 22, 70

[3] Loeb, L *Arch EntwMech Org* 1898 6, 297

[4] Arey, L B *Physiol Rev* 1936, 16, 327

[5] Wigglesworth, V B *J exp Biol* 1937, 14, 364

[6] Mann, I and Pullinger, B D *Proc R Soc Med* 1942, 229

[7] Hopkins, F G and Cole S W *J Physiol* 1901,27, 418

[8] Albanese, A A and Buschke, W *Science*, 1942, 95, 584

In England Now

A Running Commentary by Peripatetic Correspondents

WE seem to have settled down at last to a stoical acceptance of the hardships of war—sewing-cotton for ligatures no eggs and bacon for breakfast no liquid paraffin, and the ache of long-disused bicycling muscles One overfull day follows another and the spices of life seem somehow forgotten This year, last year, they seem so much alike Yet every memory of the summer of 1940 seems to be cut crystal clear in my memory As we stood on the brink of destruction during those lovely summer days every flavour that life could offer seemed infinitely sweet, for there seemed to be so sharp an edge to living Savour each morsel to the full roll it around the tongue and store it away in the memory for it may be the last Each moment seemed so much a lingering farewell to all one had loved that I swear the roses of those golden days were sweeter, the dew softer, and never did jasmine drench the moonlight as it did that night when the distance glowed red under our first air-raid It is two years ago and yet I can recall every moment of a stolen bathe Was it to be the very last ? The barricades were going up on the beaches and the wagons were being dragged across the lanes, but the water was still silver cool and it was heaven to float half asleep on the still sea and ecstasy to lie on the hot sand And all the way home the hay was sweet in the fields I was back in my youth again with blood running fast There were adventures too in those days Coming home one night from a distant cottage hospital, just as the pubs closed and the LDV came on duty, I was stopped ten times in as many miles by a swinging red lantern Each time, with a loaded double-barrelled shotgun thrust in my ribs, I had to fumble for my identity card Merciful providence alone brought me safe home that night But my most treasured memory is of a night in September of that year I was spending a week-end on Exmoor and my room overlooked the village green I woke to the sound of the church bell ringing Then the night was quiet again with the quiet of the countryside asleep Presently a steady clip-clop was heard, and into the moonlight rode the squire, an old soldier, thin and very straight on his hunter He had his revolver with him, and he was followed by two grooms, each with a shotgun In the rear came a handful of farm lads on Exmoor ponies and they had their bill-hooks slung from their waists Through the faint white mist of the summer's night they rode away up on to the moor Clip clop, clip-clop All was well Saint George had gone forth to do battle with the Dragon

* * *

A peripatetic correspondent recently wrote of the illiteracy of the medical student south of the Tweed I entirely concur and extend what he wrote to other students Mine are southrons and almost completely illiterate and I maintain that this illiteracy has developed since 1918 What have the public and secondary schools been up to all this time ? The annoying thing is that I have to pass the large majority because, under the smoke-screen of words they raise against my scouting I think I discern a knowledge of 40% of the facts of physiology It is a grief to me that such people should be let loose on an unsuspecting public as people of education They often write sheer nonsense which a moment's thought would have shown to be such The vagus—a nerve they well know to be mainly visceromotor innervates (spelt " enervates ") the external intercostals, the diaphragm (" diaghram ") and the muscles of the abdominal wall The phrenic rarely, in their answers, enervates the diaghram, but shares the other imaginary functions of the vagus This, of course, is Johnsonian " sheer ignorance, madam " but they ought not to be so ignorant so often The sentences they write, though they pause and analyse, often add nothing to knowledge What do you make of this ? " Differences of pressures in the chambers of the heart are measured by connecting needles to smoked drums " Or of this ? " The heart is attached to a fine quartz fibre suspended between two poles " Darts ? Or the Rugby football goal ? I guess, but there was no confirmatory evidence, that Piper's manometer and Einthoven's galvanometer respectively were intended I have only a hunch that this was so And the jargon they write ! What exquisite examples they would have afforded to Quiller-Couch and A P Herbert " Hæmoglobin takes up oxygen in large proportions " " The bundle of His is adapted to conduction " " This compound is very important in the function of the red blood corpuscles " " the Purkinje fibres which ramify the majority of the ventricles." (What an odd mathematical problem to find a majority among two items) Two adjacent students—I do not hint for a moment at collusion—wrote " This is of great importance with regard to the function of the cell in connection with respiration " and " This becomes important in relation to the carriage of carbon dioxide by the blood " Two minds with but a single woolliness between them ! Jargon slop woolliness and make-belief in education ! And yet with this pulp of a mentality they go out into the world, and make good That's the startling thing But this proves nothing Least of all that education is no good

Are all undergraduates so illiterate or is it only those who read science who so lack " nous," precision and power of expression ? Anyhow our schools and universities will have much to answer for at Doomsday

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Cedric has just come back from camping with some other little thugs at Brightsea He has improved enormously in every way, a change which his mother vaguely attributes to those thick woollen combinations and Auntie to the ozone which as the LNER points out is unusually dense down there A Recording Angel, however, has other views In general his severance from home life and the alterative of new surroundings and diet have been beneficial In particular, going down in the train he was set on by his friends and got a large bruise of the thigh Clever people call this autohæmotherapy , it acts in the same way as trying out one's repartee at home first or sparring with a younger brother before taking on the boy down the street He was far too busy for the first three days to open his bowels This gave him a sour mouth, to which green apples were irresistible His pylorus said, " Hoots, if you'd only give me food like this for two months, my lad, I'd make you a stomach an ostrich might be proud of ! " It kept on saying it all night and the lower tubes joined in the chorus During this hymn of praise all the proud racial groups in the large intestine, who for the last ten thousand generations had never had to face anything worse than a mild cataclysm from syrup of figs, were swept away A sturdier lot, who managed to run the acid blockade, took their place , they came from sewage-contaminated ditch-water which he drank on a very hot day, some uncooked food stolen from the store-tent and much favoured by the latrine flies and a host of grasses, well-manured straws and bits of wood which he sucked or with which he picked his teeth Nor was this all—in a fight with a friend Cedric bit his hand and swallowed some oxyuris eggs His eosinophils were delighted, they hadn't had such an outing since two years ago when he hogged some bad fish which had been thoughtfully put aside for the cat Outside the narrow world of the gut other happy events were taking place His leucocytes were having splendid sport they were partially mobilised all the time and dealt with sunburn torn knees, hundreds of mosquito gnat and horsefly bites, and of dog, boy and wasp bites one each The neglected aliens disposal board so important to his forefathers also worked day and night , nettle stings, cockles, berries, a legion of moulds and pollens and the excretions and emanations from his little friends were among its chief clients Nor must we forget his fibroblasts, who owing to many surface abrasions were able permanently to retire their older members, thus making room for new blood Many muscles were fully used for the first time—e g , the abductor hallucis—or put to a new use like the masseters in defæcation Mentally he became much more alert This was partly due to the great depth of his sleep, the result of his getting plenty of CO_2 under his blankets and those excellent hypnotics, the effluvia from the axillary and inguinal region, and partly to his realising that he was now in an unprotected state, and that pain hunger and/or indignity followed any failure of defence precautions Psychically also he improved In " helping " a farmer thresh he killed and maimed a number of rats, thus proving his superiority over another mammal and this sadistic orgy had a most tonic effect on his ego (nee id) Spiritually—if one can use this word with such as Cedric—perhaps he was born, for in that for the first time he saw the dawn (from the latrine during the apple deluge), in that he felt the immensity of the sea (and swallowed several pints of it), and in that he smelt the mists from lowland leas at dusk, which he compared unfavourably with those from a friedfish shop, it may be hoped that he glimpsed the face of his Creator

* * *

I had a partner once who vowed that he would write, before he died, a book with the title "Anatomy and Toxicology for Would-be Suicides and Murderers" The determination came at the end of a long operation we had done together on a girl with a severe self-inflicted abdominal wound Actually she was more unlucky than ignorant, for in talking with her doctor an hour or two before she had made some remark and added "With my hand on my heart, I swear it is true," and she put her hand on her left breast as she said it The doctor, who never dreamt of the outcome of his joke, teased her with, "Don't be silly, your heart isn't there it's here," folding his hands on his prominent paunch Then only a few days ago I saw a woman who had wandered into her bathroom in search of a draught to end all trouble She first came on a bottle of carron oil and hopefully swallowed the lot Finding that she felt if anything a little better for this drink she went to look for something more potent and this time put away the best part of a bottle of lysol So well protected with oil were her mouth, œsophagus and stomach that she came to little harm apart from having to submit to the indignity of the *stomach pump* When I told this to my late partner he said that he now planned an appendix of anatomy for abortionists, having recently removed a vast and jagged piece of slippery-elm bark from the bladder of a woman who had thrust it hopefully into the wrong orifice

* * *

I have had enough experience of parents' matches at preparatory schools to know that they seldom, if ever, go according to plan The theory is, of course, that the parents, by the exercise of their superior skill and cunning, so contrive matters that the boys win, by one run or thereabouts, in the last over of the day You can take it from me that it never works If the parents bat first they are all fiddled out for an absurdly small total and lose by 10 wickets If they field first they start by tempering the wind to the shorn lamb—bowling long hops to leg and artistically dropping simple catches—only to find that the opening pair of little brutes, having thoroughly played themselves in, can't be separated, with the result that the boys declare with 250 for 3 on the board and the parents as usual rabbit out for about 50 The prospect of playing for the parents at a large school for large girls was even more alarming I have now reached an age when I no longer look forward to standing up to swift bowling from a lot of beefy girls—and how beefy they are these days, to be sure! However, there was no wriggling out of it and as the father of a small and new big girl I felt that much depended on me The parents batted first and when I went in—even more nervous than usual in such circumstances—we had lost 5 wickets for a matter of 20 runs As if they hadn't enough to cope with male parents were issued with pieces of wood, sawn off, narrow and unspliced at that, to serve as bats By watching the ball with extreme care I survived a shaky over or two and began to get the measure of things I was ably partnered by an absurdly young-looking father We took the score to 80 and were *still* together at the tea interval when, to my relief, we were forcibly retired Thanks to some brisk hitting by a couple of athletic mothers the parents' total topped the hundred and when stumps were drawn we had got half the young ladies out for 60 so it was a pretty even game I was told afterwards by my small daughter that my performance had given satisfaction and that I had even been described as a classy bat, that ought to do her a bit of good Appropriately enough I bowled a couple of maidens

* * *

For Positive Health we always preach
And Positive Health we sometimes teach,
But Positive Health we never reach,
It's cranky and slightly boring

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M P

THE last days of the session before the recess have been crowded with business and with meetings in committee rooms at which distinguished people have come *to give Parliament information on matters of grave* public concern M Maisky, the Soviet ambassador, addressed members on the military situation in Russia a Frenchman, lately escaped from Lyons, spoke with great eloquence and persuasive conviction on the present situation in France, and Mr Nash, New Zealand Minister at Washington, described the situation in the Pacific No member has any excuse for not realising that we are in truth in the midst of a world war And the adieux some of us have made to Sir Arthur Salter, parliamentary secretary to the Ministry of War Transport, on his return to his office in Washington, have underlined this world-war aspect The air linked framework of the post-war world is already beginning to appear in the air-linked civilian and military staffs of the United Nations who move from continent to continent as quickly as four years ago we moved from London to Paris All problems, and not least all medical problems, must be looked at in the light of this revolution in transport and communications and, complementarily, in the pooling of our personnel under lease lend arrangements

The colonies are now part of our back-garden and when Dr H B Morgan in a Colonial Office debate criticises administration there—"neglected food-supplies, extensive diseases, poor medical services, destitution, poor wages, people divorced from the land, high illegitimacy rates, juvenile delinquency, minimum welfare, poor educational standards and facilities"—he is criticising things which will affect us tomorrow as closely as the slums of London and Glasgow affected us yesterday It is indeed significant that we have had two Colonial debates in such quick succession The disasters of Malaya and Singapore and Burma have made us colony-conscious Dr Morgan advocated, among other things, a federated medical service for the West Indies open to both European and West Indies on equal terms There is no more urgently needed reform in all the Colonies No real progress can be made until health conditions there approximate to those in Western Europe

Mr H Macmillan, Under-Secretary of State for the Colonies, said in his reply that in terms of services—medical services and so on—standards have risen in the colonies during the war But in the West Indies the submarine menace in the Caribbean is preventing this and in Rhodesia and Nigeria there is the complication of the introduction of forced labour especially for tin mining What the effect of this on health conditions will be is not easy to forecast But unless the arrangements for huts, sanitation, water and food are a great improvement on the conditions at prewar mines the results may be deplorable But the Colonial Secretary had said that he did not like forced labour and would get away from it as soon as possible What the conditions become will depend on the duration of the war

* * *

Other business has been the passing of the United States of America (Visiting Forces) Bill which takes American soldiers out of the jurisdiction of British courts *to their own court-martials and which may provide* some difficult situations with regard to medical evidence We have also had a debate on conditions in Ordnance Factories and a vindication of their efficiency by Sir Andrew Duncan

* * *

On the last day of the session Mr I C Hannah arose on the Conservative benches, duly called by the Speaker, and at the top of his voice cried aloud "Who can count the dust of Jacob," which somehow reduced the whole house, a crowded house, to helpless laughter, front benches and back benches going down like rows of cards *This was the introduction* to an historical disquisition on the contacts of Judæa and Mahomet, on ancient history and modern, and incidentally, on the possibility of recruiting a Jewish and Arab Army in Palestine It was a great oratorical feat for it kept the attention of the house—a delightedly laughing attention—and there are not too many amusing speeches in the House these days And so, after a statement on prisoners of war by Sir J Grigg and a discussion on the transfer of women munition-workers from one part of the country to another, away to a recess which members think too long because they fear it may be curtailed by a grave crisis in the war

QUESTION TIME

Pensions for Cripples

Mr B V Kirby asked the Paymaster General whether, in aming the Government's post-war reconstruction programme, would consider the desirability of introducing state ensions for all persons permanently crippled, thus relieving em of the pain and anxiety of competing in the labour arket with those more physically fitted for the life of industry id commerce —Sir William Jowitt replied This matter lls within the scope of the committee on social insurance id allied services presided over by Sir William Beveridge understand that the committee have received evidence from rganisations and persons concerned with the welfare of ripples and that the question is likely to be dealt with in the eport

Tuberculosis in Wales

Mr James Griffiths asked the Minister of Health what teps had been taken to deal with the waiting list of patients or admission to tuberculosis hospitals and sanatoria in Wales -Mr E Brown replied I have under immediate considera ion the possibility of releasing from the Emergency Hospital cheme a further 200 beds for tuberculosis cases in Wales

Pension Cases Referred to Specialists

Mr James Barr asked the Minister of Pensions how many ension cases had been submitted to the panel of independent nedical specialists since the declaration of war, and with hat result —Sir W Womersley replied 127 cases have een so referred, of which 46 were recommended for admission o pension

Admission of Women to London Medical Schools

Prof A V Hill asked the Minister of Labour whether he was aware that most medical schools in London refused to accept women medical students, although many with good educational qualifications were anxious to enter, and whether, in view of the fact that students beginning now would not be medically qualified for several years, he would refuse to reserve any more men to commence the study of medicine in these schools unless they agreed to take a reasonable proportion of suitable women —Mr Ernest Bevin replied I am aware that some medical schools in London do not accept women students Whether such schools should accept them is a question for consideration by the committee on medical schools I must, however, take all relevant facts into consideration before I agree to reservation

Reservation of Dental Students

Prof Hill asked the Minister whether he was aware that a number of foreign refugee dentists were at present unemployed, and whether, in view of the shortage of man power, he would cease to reserve further dental students from military service until these refugee dentists were absorbed, either in practice with temporary registration, or as students to obtain British qualifications —Mr Bevin referred to the reply given by the Minister of Health on July 14, and added that the suggested reduction in the quota of British dental students would not be practicable since quotas of dental students are fixed with a view to maintaining the future supply of British dentists, and it would not be proper to reduce them to make room for students who may not in the ordinary course be practising in this country after the war

Shortage of Midwives

Mr G C Hutchinson asked the Minister of Health whether he was aware that it is the policy of the Central Midwives Board to require pupil midwives during the second period of their training to reside in the homes of district teacher midwives and to permit a limited number of pupils only to reside during this part of their training in an institution, that, as a result, only four pupil midwives could now be trained in the maternity service maintained by the Ilford borough council, and whether, in view of the need for training a sufficient number of midwives and the difficulty of arranging for pupils to reside with district teachers, especially under war time conditions, he would take steps to secure some modification of the present policy —Mr Brown replied I am aware that the policy of the CMB is to require pupil midwives to live with their district teacher during a part of their second period of training, so that they may receive the full value of the domiciliary training The shortage of practising midwives is not due to a shortage of pupils, but to the failure of many qualified midwives to practise I do not, therefore, think it is necessary to ask the board to modify their policy

Mr Hutchinson Is the Minister aware that the Ilford borough council would be able to train a very much greater number of pupil midwives if they were permitted to reside in the institution instead of with the district teachers ?—No further reply was given —Professor Hill Does the Minister consider it a good thing to allow young men to stay out of the Services merely to prevent women entering the medical profession ?—Mr Bevin I do not deal with reservations on that basis No one regrets more than I do the rigidity of the medical trade union rules

Diabetes as Cause of Death

Replying to a question Mr E Brown said Before 1940 the statistical classification of deaths in respect of certificates attributing the cause to diabetes in conjunction with one or more other diseases was decided by means of rules giving the precedence of one disease over another as laid down in the Registrar General's manuals of the International List These rules gave a high precedence to diabetes over other diseases From 1940 classification has been carried out in accordance with the order of statement of the various causes on the certificate by the certifying medical practitioner, with certain exceptions laid down in the manual issued in 1940. Since diabetes is frequently certified as merely a contributory cause of death, in association with another disease considered by the certifier as more important, the effect has been to reduce the number of deaths classified to diabetes in the statistics of cause of death, and the corrective factor to be applied to numbers of deaths in years prior to 1940 is 0 69 In the recent quarterly returns of the Registrar-General the necessary correction has been applied to the diabetes deaths there shown for years 1938 and 1939

Infectious Disease in England and Wales

WEEK ENDED AUG 1

Notifications —The following cases of infectious disease were notified during the week smallpox, 0*, scarlet fever, 1456, whooping-cough, 1116, diphtheria, 650, paratyphoid, 6, typhoid, 9, measles (excluding rubella), 6476, pneumonia (primary or influenzal), 418, puerperal pyrexia, 160, cerebrospinal fever, 69, poliomyelitis, 9, polio-encephalitis, 4, encephalitis lethargica, 1, dysentery, 64, ophthalmia neonatorum, 81 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on July 29 was 1561, including scarlet fever, 2[illegible], diphtheria, 146 measles, 375 whooping-cough, 238 enteritis 65 chicken pox 87, erysipelas 38, mumps, 60 poliomyelitis 2 dysentery, 35, cerebrospinal fever, 14 puerperal sepsis, 18, enteric fever, 4 german measles 2 other diseases (non infectious), 118, not yet diagnosed 104

Deaths —In 126 great towns there were no deaths from scarlet fever or enteric fever, 3 (1) from measles, 4 (2) from whooping-cough, 12 (0) from diphtheria, 42 (11) from diarrhœa and enteritis under two years, and 6 (0) from influenza The figures in parentheses are those for London itself

Birmingham reported 5 deaths from diarrhœa, Ipswich 4

The number of stillbirths notified during the week was 234 (corresponding to a rate of 35 per thousand total births), including 34 in London

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* In the week ended July 25 2 cases of smallpox were notified, 1 in Westminster and 1 at Stone Staffordshire

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Medical Sickness, Annuity and Life Assurance Society —At the annual meeting of this society, held on July 27, Mr R J McNeil Love, chairman of the board of directors, who presided, said the amount of new life assurance business was only slightly smaller, but the claims by death had been lighter and the surrenders fewer On the sickness fund the claims had been considerably lighter and the premiums were up a little The funds of the society had been increased by £173,537, and now stood at £2,355,319 The quinquennial valuation at the end of last year had disclosed a surplus of nearly £83,000 on the life assurance and annuity fund and of £120,850 on the sickness fund

SCOTLAND

PREVENTIVE MEDICINE ON CLYDESIDE

SOME months ago an important experiment in preventive medicine was begun in the Clyde basin, where nearly half the insured population of Scotland is huddled, and where sickness-rates before the war were high General practitioners in this area were asked to refer to the EMS regional officer young people of 15–25 among their patients who were engaged on war work and seemed likely to benefit from further investigation or treatment In his Honyman Gillespie lecture in Edinburgh on July 30, Dr Andrew Davidson, chief medical officer for the Department of Health, described how the scheme had worked in practice Just under 700 patients have been dealt with and about half of these have been admitted to EMS hospitals or convalescent homes Most of them were young debilitated workers, complaining of fatigue, vague aches and loss of appetite, in whom little gross organic disease was found, but some had anæmia, bad teeth or unhealthy tonsils to account for their symptoms, others were convalescing from influenza, pleurisy or pneumonia, and a few were contacts in whom the tuberculosis officer had found no signs of disease The next biggest group of patients included those suffering from anxiety states and those with repeated attacks of minor respiratory illnesses whose convalescence had been prolonged. Most of these patients had a history of long hours of work, uncongenial work, changing shifts, excessive travelling, unsatisfactory diet—this in spite of local canteens—too much smoking and so forth On the whole late hours and ill-spent leisure were not common Many only needed a rest, change of scene and good food to restore them and they were sent directly to convalescent hospitals But when the ordinary overhaul left any doubt about the possibility of more serious disease they were first sent to hospital for a thorough examination Reports from discharged patients leave no doubt of the good the scheme has done, but the after-care of these young patients is equally important and it is hoped as the experiment develops, with the help of the Ministry of Labour, to arrange from time to time to review the work of these people in relation to their physical condition

EDINBURGH SCHOOL HEALTH SERVICES

Last month the Edinburgh education committee approved a reorganisation of their medical and dental services which cannot, however, be put into operation until after the war The new service will cost £32,000, or nearly double as much as the old one Special stress is to be laid on the care of the children's teeth, and there will be ten dental officers instead of seven The scheme will also include part-time oculists and aurists

GEORGE KEPPIE PATERSON

Dr G Keppie Paterson, who died last month at the age of 81, was elected to the fellowship of the Royal College of Physicians of Edinburgh in 1895 and was one of its senior fellows After graduating with honours from the University of Edinburgh in 1882 he was for over ten years assistant to Sir Alexander, then Professor, Simpson Dr Paterson was an enthusiastic worker for the Edinburgh Medical Missionary Society and for more than half a century was associated with the Livingstone Dispensary in the Cowgate, of which he was convenor and consulting obstetrician Travelling and music were his hobbies and for many years in the midst of a busy general practice he found time to run a choir at the dispensary

WELFARE OF SCOTTISH MINERS

The Secretary of State for Scotland has appointed a committee under the chairmanship of Sir David King Murray to report what measures should be taken to enable the fullest use to be made of existing and potential resources in the Scottish coalfields and what provision of houses and other services will be required for the welfare of the mining community Eight of the committee's twelve members are representatives of owners and workers The other four are the county clerk of Stirling, Mr F C Mears, FRIBA, planning consultant for East Lothian, Midlothian, Fife and Greenock, Mr Thomas Brown, consulting mining engineer of Glasgow, and Mr A S McKinlay, MP, deputy chairman of Glasgow corporation It is to be regretted that there is no medical member

MEDICINE AND THE LAW

Advertised Cures for Diabetes

FURTHER prosecutions during July gave fresh publicity to the fact that, under section 8 of the Pharmacy and Medicine Act, 1941, it is now an offence to advertise any article in terms calculated to lead to the use of the article for the purpose of treating diabetes, tuberculosis, epilepsy and other specified diseases

In a case at Bristol, where a defendant was fined £5 on the prosecution of the Pharmaceutical Society, it was said that he had formerly advertised in a magazine called the *Herb Doctor* a patent medicine called 'Daddy's Deodorised Viscous Oil' for treating diabetes This advertisement had appeared long before the act was passed Recently one of the society's inspectors had written to ask the defendant for particulars of this cure In his reply the defendant said that he was no longer permitted to describe the medicine as a remedy for diabetes He seems, however, to have enclosed a printed circular stating that it was a cure for diabetes Section 8 (2) of the act declares it to be a good defence to prove that the advertisement was published only so far as was reasonably necessary to bring it to the notice of persons of certain named classes, including members of Parliament, hospital committees, registered medical practitioners, registered nurses and registered pharmacists Section 10 (2) says it shall be a good defence to prove that the advertisement was published only in a publication of a technical character intended for circulation mainly among persons of certain named classes, including registered medical practitioners, registered nurses and registered pharmacists Section 15 places on the Pharmaceutical Society a statutory duty to enforce section 8 and to employ its inspectors for that purpose The Bristol defendant's legal representative took the ingenious point that, as the prosecuting inspector was a registered pharmacist, there was a good defence When this contention failed, he complained that his client had been trapped by the society in a not very worthy manner

In another case, heard at Dolgelley, a Caernarvon company, T S Ingham, Ltd, was summoned for advertising a product by means of a booklet entitled "The Conquest of Diabetes" Here the prosecution seems to have been undertaken under the act by the local food and drugs authority A Merioneth weights and measures inspector said that his assistant bought a bus ticket on which was an invitation to write for a free copy of this booklet He did so, and after sending money received a bottle of tablets The booklet described the discovery of a herb in South Africa and its cultivation and preparation as an effective treatment for diabetes The weights and measures inspector disclaimed making any accusation against the merits of the tablets—a fact which the defendant's solicitor emphasised "You don't mean to say," asked Dr John Jones, the presiding magistrate, "that this is a remedy for diabetes, do you?" "I am instructed that it is," replied the solicitor, "if you read this booklet, I think you will find it is an adequate remedy for diabetes" The solicitor explained that the advertisement on the bus tickets was arranged for in 1938 but evidently the old stocks were not yet exhausted The Caernarvon company had asked the omnibus company to discontinue the use of these tickets, but the Government restrictions on paper made this impossible The booklets were kept in stock for the foreign and colonial trade where, said the solicitor, their use was legal The defendant company was short of staff, owing to the war, and Mr T H Ingham, one of the two directors and also the secretary of the Caernarvon company, was unable to give his full attention to details as he was a sergeant in the Caernarvon special constabulary The magistrates imposed a fine of £5, including costs

It may be added that the act requires the consent of the Attorney General to be obtained before proceedings are instituted under section 8 This requirement presumably ensures that frivolous and unnecessary prosecutions are not undertaken

Letters to the Editor

DIPHTHERIA IN INOCULATED PERSONS

SIR,—The paper by Dr Glover and Professor Wright your issue of Aug 1 brings again into prominence the uestion of the value of the subsequent Schick test ter immunisation against diphtheria Bousfield and hers have shown that the subsequent Schick test incates a percentage of failures in immunisation which ries with the type of prophylactic used and the chnique and dosage adopted, and it appears that failure-rate of 0 5% is not uncommon even with the est material and technique The case-incidence in oculated persons represented by the figures of Glover nd Wright is approximately 0 72%, a figure sufficiently ear to the foregoing, allowing for the variation in aterial used, to be accounted for by a normal failure-ate The case-fatality rate is low enough to suggest at even in the apparent failures the immunisation ay have had some modifying effect on the course of he disease and the claim that from the point of view f herd immunity the results are satisfactory is quite ustifiable So long, however, as immunisation is urely voluntary the necessity for popular education in ts value is of paramount importance The scientist will be more than satisfied with figures such as these, but those who are concerned with anti-immunisation propaganda will be able to focus public attention on the fact that 396 cases, with 11 deaths, occurred in immunised ndividuals during the period under review and to say o the parent “ one of these children might have been yours ! ”, a propaganda point with direct human appeal Even to be honest with the parents who bring their children to the immunisation clinics and to say that one child in every two hundred will not obtain protection is a dangerous weakness in our case for general immunisation, since the parent is naturally more concerned with the safety of his own child than with the more academic point of the freedom of the community from epidemics

The low incidence of the disease among children found to be subsequently Schick-negative and the infinitesimal proportion of fatal or serious cases among Schick-negatives does, however, put us in a position to say to the parent of the subsequently tested case that we can very nearly guarantee immunity from serious risk, or, if the test is positive, that immunisation having failed the danger of diphtheria should be carefully borne in mind if any symptoms develop By carrying out the test we can eliminate the case of the parent who, lulled into a false sense of security by the knowledge that immunisation has been carried out, allows the disease to progress to a dangerous stage before calling in the doctor

In the large city the technical work of Schick-testing is formidable, but should not be insuperably difficult In the small town, where a single serious case in an immunised child may completely wreck an immunisation scheme by the spreading of plain or more frequently embroidered rumours, the task is easier and much more essential In this town, for instance, although not a single case of diphtheria has yet been recorded in an immunised child, a fatal case in a neighbouring district, in a child inoculated but not subsequently tested, caused a considerable falling off in the numbers applying for immunisation The Schick-testing of sample batches, a useful method of discovering the efficiency of a scheme as a whole, does not help to solve the problem of the individual

One wonders, too whether the complete abandonment of the preliminary Schick test is wise If the incidence of the primary negatives is over 30%, the saving of time and materials resulting from a preliminary Schick is great enough to be worth the trouble, and such a high incidence of immunity is possible in certain circumstances In this town the after-effects of a considerable epidemic of a low-grade clinical type in the winter of 1937–38 were producing, in 1940, a preliminary Schick-negative rate of this order With the passage of time and the growing up of infants who were too young to be exposed in that epidemic, it is now found that this high negative rate only applies to children over 10 years, so that the preliminary test is used now only in the older groups, but the practice of carrying out preliminary tests on sample batches in order to obtain some index of the proportion of naturally immune children might prove worth while as a general policy in urban areas

Accrington JOHN D KERSHAW

INCIDENCE OF RHEUMATIC FEVER

SIR,—Morris and Titmuss in their valuable article of July 18 showed the power of the social factor over the mortality from rheumatic heart disease, but I think that their findings cannot simply be applied to the problem of incidence of the disease It is one thing to show that once a patient has developed rheumatic heart disease the mortality rises steeply with poverty, but quite a different matter (pace your editorial) to show that in acquiring acute rheumatism poverty is peculiarly potent Indeed the only figures for economic status that Morris and Titmuss could quote showed that deaths from rheumatic fever at 20 years and upwards are not related to poverty These figures they dismissed on the ground that “ rheumatic fever is important only in childhood ” , and surely this statement of theirs is an exaggeration Being interested in the problem, I have made routine inquiry into the family history of my patients for rheumatic fever, rheumatic heart disease and rheumatic chorea (which I shall call the rheumatic diseases for brevity)

(a) In 300 “ control ” patients treated for miscellaneous medical diseases, one or more cases of the rheumatic diseases occurred in 41 of their 300 families Thus, in this district (Deptford and Greenwich) among 100 families I can expect some 14 familes to have a case of the rheumatic diseases in a member other than the one questioned

(b) In 150 patients who had suffered or were suffering from the rheumatic diseases I took family histories At least one additional case of the rheumatic diseases occurred in 48 families—i e , an incidence of additional cases in 32 families per 100 “ rheumatic ” families

What is the explanation for this excess over the controls ? Possible explanations are poverty, infection or contagion, and/or familial predisposition ! The 150 rheumatic families came from the same district and the same social groups as the 300 others Yet once a case of the rheumatic diseases had occurred in a family, the incidence of *further* cases in those families was greater than the incidence of *first* cases among the controls Infection or contagion is an unlikely explanation—it is common for acute rheumatism to arise in different members of a family at intervals of many years I conclude that a familial predisposition is likely, but, once rheumatic heart disease is acquired, poverty is specially important in determining mortality Emphasis on the sensitivity of the disease to social inequality may be overdue, but stress on hereditary influence is not therefore premature

I thank Dr W Allen Daley, medical officer of health of the London County Council, and Dr B A Young, medical superintendent, for permission to publish this letter, but I am solely responsible for the views expressed

Greenwich ELI DAVIS

SUCTION DRAINAGE OF TUBERCULOUS CAVITIES

SIR,—In your annotation of Aug 1 (p 130) you say, “ The operation improves the general condition of the patient by reducing toxæmia and reducing cough and sputum ” As one who has been associated with a comparatively large number of cases treated in this way, and whose function it has been to select suitable cases and observe their subsequent progress, I have formed the opinion that in a certain proportion of cases the immediate improvement in the well-being of the patient has been quite out of keeping with the mechanical results achieved Neither has the patient’s improved general condition been essentially due in all cases to the abatement of pre-existing symptoms such as cough and sputum I agree that where these symptoms have been prominent beforehand the patient experiences considerable relief from their modification after cavity drainage, and this relief often justifies the continuance of drainage where there is a wide-open bronchus and the cavity shows no signs of closing But the almost immediate general improvement has often been even more striking in persons who have not previously complained of cough and from whom sputum was unobtainable by ordinary methods Two somewhat anomalous cases may illustrate my point In the first the cavity was "missed" at the operation, no drainage took place, and the catheter was removed after two days The patient appeared, however, to be better for the procedure and the large cavity rapidly diminished in size and may by now have closed completely In the second case there were at least two large cavities in each lung Drainage of one cavity was successfully undertaken and it is no longer seen on X ray In spite of the presence of three equally large untreated cavities elsewhere, the patient, who is a good witness, is emphatic as to the immediate improvement in his well-being which followed the operation I am not prepared to attach any significance to the fact that now, some two months later, the cavities in the contralateral lung are much smaller, for they were obviously distention cavities, which may well fluctuate in size

The apparent detoxication of a certain proportion of patients which has been noted is difficult to correlate with the bacterial changes which take place within the cavity, for, whereas the preliminary specimens are almost invariably sterile, within a few days both the cavity effluent and the catheter track become heavily infected with secondary organisms I have not felt satisfied that mechanical considerations provide a complete explanation of the frequent clinical improvement Can it be that the claims of Lavalle (*Lancet*, 1937, ii, 1299) to influence favourably the course of tuberculous disease both in bone and in lung by driving an instrument through healthy tissue down to diseased tissue are worthy of serious consideration ? He claims that by the process of lung puncture in about 200 cases he has produced in 76–80% decreased sputum and physical signs, and X-ray changes which show "absorption of the lesion and increased fibrosis" The method is, on the face of it, crude, empirical and apparently devoid of scientific basis, and as such it makes no appeal and has received little or no attention from phthisiologists in this country, although I have seen a series of orthopædic cases treated with apparent success If results are indeed achieved by this strange technique, I should be inclined to attribute them to a form of gross shock therapy It is not inconceivable that tissue response might be modified, temporarily at least, by local trauma In the Monaldi technique we are submitting the patient to the same operative procedure, though our attention is directed to a different focus Is it possible that in some of our cases we are observing the same clinical phenomena which have led Lavalle to make his therapeutic claims ?

Harefield, Middlesex L E HOUGHTON

THE STUDY OF ÆTIOLOGY

SIR,—To Professor Ryle's list mentioned in his article of July 11 (which may be required, and for whose assistance workers in the field of ætiology will be grateful), might I make two all-important additions—system and statistics These are of immediate and practical importance In a year's analysis of my weekly list of panel patients I found that only an average of 3 6% were inmates of hospitals If any attempt is made to correlate this 3 6% with the rest of complaining man it is obvious that the aid of statistics must be sought By that science it is not only possible to test one's own hypotheses, it is easy and interesting to test the ætiological assumptions of workers whose opportunities are limited to the hospital type of patient

The study of ætiology as it is peculiar to general practice seems to fall into three spheres (*a*) the relationship of minor maladies to major diseases, (*b*) the relationship of a malady to the state of nourishment of the body at the time of its occurrence, (*c*) the relationship of the cause of death to the state of nourishment of the body throughout adult life It is, therefore, the study of a lifetime and while statistics are used to analyse and correlate the various studies it would appear that explanations must be sought in physics as well as physiology, for no study of cause can be complete which does not seek to reach out towards the common science of cause With the inevitably increasing delegation of the diagnosis and treatment of disease to the clinical units of hospitals and nursing-homes, the general practitioner should be finding more time to devote to this branch of his work, and with that conception of his duty may I allowed to comment very briefly on the BMA Pl Commission's interim report

In the twenty-five years which I have spent on corded study I have accumulated records which oc 47 sq ft of wall space Research workers know the best work can be done when one can be reaso assured of several hours of uninterrupted study Gene practitioners can only find those late at night I nev know the evenings when I may wish to look at some of the records, nor to which section of the records the study lead me If, through the adoption of the BMA sche those records come to be locked up each night in clinical centre, then the remaining years of my m life may be easier but they will cease to be as interest

Halifax A GARVIE

SOLDIER'S DOCTOR

SIR,—As a regimental MO myself, may I support v editorial opinion, though not for quite the same reas that the job is pleasant and beneficial, and certainl the whirlpool of apathy and boredom depicted b Jackson If the job is well done there is a ce amount of spare time How is this to be filled ? Ma McGlashan's letter in the same issue hints at the answer in learning to recognise and evaluate the "third dim sion," the cultural matrix that our patients live in, its manifestation in their own mentality

The great majority of doctors are quite incredi uncultured They do not even want to know an about Greek literature, Roman organisation, and the Jewish scriptures—the three foundations of our culture, and their ignorance is only paralleled by their inability to restrain their contempt for such immaterial factors in the ætiology of disease (A notable exception is Mr Kenneth Walker, see his "Diagnosis of Man") These hermit-crabs oscillate between the laboratory and the library, pass MD and MRCP exams at the age of 25, and at 35 produce their masterpiece, a 3-volume work on the Calcification of the Pineal Gland, the last two volumes being simply a bibliography of the previous literature

This picture is barely an exaggerated one of many of my contemporaries, men who stayed in the EMS as long as they could (often with the active connivance of their seniors) to avoid the "apathy" of Army life On the other hand, spare time can be amply filled with studying philosophy, than which there is no better mental training, or religion and mythology, or sociology and economics, for discerning the impalpable forces that guide our destinies, and so on, with time for exercise too For myself, I am finding great pleasure in studying Christian origins, and in beginning to learn Chinese

CAPTAIN RAMC (Home Forces)

SIR,—Had I not been taught in my youth to treat old age with undue reverence I might have congratulated your correspondent "Fogey," who has apparently missed the whole point of my letter, upon his choice of a non-de-plume My criticism is directed against an inflexible medico-military system which gives the regimental MO far too little medical work to do (and most of that of so trivial a nature as to be well within the compass of an intelligent boy scout) with the very natural result that he gets "browned off" (as they say) I contend that his job might very easily be made much more attractive and instructive He might, for example, be brought into much closer and more active contact—not merely as a spectator—with civil and military hospitals and civilian medical practitioners, he might with advantage be able to see the troops under his medical care through a much wider range of illness than at present, he might administer anæsthetics, perform minor operations or assist at major ones I do not in the least mind being called an immalleable brick because I doubt whether malleability is a desirable quality in bricks, and I forgive Fogey for calling me—on no evidence whatsoever—a square peg in a round hole, but to the young army doctor, with whom we are concerned, it is not the shape of the hole that matters, it is its smallness and dullnes that cramps his style I agree with "Captain RAMC" that the young MO might spend more of his spare time in acquiring general education—I mistrust the blessed word culture—but what people do with their spare time is their own affair I maintain that even the most nscientious regimental doctor at home has far too uch time on his hands which ought not to be spare , ought to be devoted to active doctoring If those in thority would provide opportunity for this, as they ndoubtedly could, there would be no need for “ pep ” lks to a much-tried generation

Crediton, Devon L N JACKSON

PRIVILEGE FOR HOSPITAL RECORDS

SIR,—The note under this heading in your issue for ay 16 (p 600) gave me the impression that the Court f Appeal had laid down some new principle of law pholding Mr C E A Bedwell’s view (with which I ubstantially agree) that hospital records ought to be rotected from disclosure to persons who contemplate ringing suit against the hospital or its staff Actually he decision did nothing of the kind, but merely followed ell-settled law

Your account of the proceedings is perfectly correct n aggrieved ex-patient, suing two surgeons and the ommittee of management for negligence, asked the ourt to grant him discovery of the relevant hospital records to assist him in building up his case Discovery of documents is asked for and granted every day in the ordinary course of litigation, the rule being broadly that a plaintiff is entitled to use documents in the possession of the other side if they are reasonably necessary to him and not protected under any special rule of procedure The question before the Court of Appeal related to two documents only a report written by the consulting surgeon to the secretary-superintendent and the letter covering it The court refused to grant discovery of this report and the letter , but not because they were confidential documents made by a member of the medical staff in the ordinary course of the hospital’s work On the contrary, the hospital’s advisers actually disclosed other confidential records to this patient on the master’s order, and did not appeal in respect of them The surgeon’s report and letter were protected for the simple reason that they were written in expectation of a claim at law The hospital claimed and were granted privilege, as you state, on the ground that these were documents passing between the committee of management, their solicitors and proposed witnesses for the defence in the action

The privilege was legal not medical The law jealously protects from disclosure all communications passing between a man and his legal adviser, on the ground that the administration of justice requires their protection , the court merely applied this rule It would be a pity if hospital managers were to believe that this decision protected all medical records from disclosure in future Such records are no more privileged than are the books of a trading company unless they happen to be prepared with litigation in view

London S W 19 D HARCOURT KITCHIN

HOSPITAL OR DOMICILIARY CONFINEMENT

SIR,—I agree with Dr Menzies in her regret at the higher proportion of bottle-fed babies among hospital cases, but I am not convinced that hospitalisation per se is to blame Owing to the shifting population in this area I cannot produce accurate figures for 1939–40 to compare with hers and I must therefore accept her 10% as representative To assess this 10% at its true value, I should like to know more of the circumstances which led these mothers to choose confinement in hospital and to make sure that they would have had a better chance of making a success of breast-feeding at home The factors which lead a woman to choose hospital may be just those which detract from breast-feeding One hears these women say “ My husband is away and I am quite alone ” . “ My mother and sisters are out all day and there is no-one to look after me ” It is not so much accommodation that is lacking as responsible friends or relatives, and it is their help which the mother needs in getting back to domestic life when she is still convalescing Without them she is liable to overtax her physical and mental abilities, and lactation suffers But why blame the hospital ? Let the health services and the relatives do their share

Selection of cases for domiciliary confinement is difficult, and the mother’s personal preference must weigh largely in deciding Until facilities for dealing with unpredictable emergencies are improved, there will be cases which have to be transferred to hospital during labour This being always to some degree detrimental to the mother, it would be unfair to deny her the right of hospital confinement if she desires it Once delivered, most women can equally well be nursed at home If, as Dr Menzies suggests, home nursing is conducive to breast feeding, some modification of our service might be made so that healthy mothers and infants are transferred early in the puerperium substituting the home for the lying-in ward Those whose home conditions are unsuitable might be prevailed upon to stay longer At present they often go home too soon, though not necessarily by the wish of the hospital staff

I am not impressed by the “ evidence that insistence on the necessity for antenatal supervision may have developed fears in the pregnant woman ” The publicity given to maternal mortality may have increased her awareness of the risks, but this sends her to the clinic where her fears are assuaged No-one suggests that the conscientious mother who attends the welfare clinic and has her child vaccinated, inoculated, immunised and weighed is abnormally fearful The same mother will seek prophylaxis for herself and her unborn child I do *not agree that hospital confinement surrounds child*-bearing with an atmosphere of abnormality The young mother accepts hospital as the normal place, just as the older generation accepted the home A happy “ normal ” atmosphere is essential, and in my experience of municipal maternity units it is uncommon to find sufficient abnormal women with “ tales of suffering ” to upset this The majority are safely through their labour and engrossed in the next stage With less selection of cases the proportion of abnormals will be less and any difficulty of this kind will disappear Some of the older multiparæ previously confined at home find they get a better rest by entering hospital, provided that their minds are at ease about their homes

Dr Menzies is right in pointing out the deficiencies in the breast-feeding results of hospital mothers Nevertheless I still think that for the majority of mothers of the artisan class the advantages of institutional midwifery outweigh its disadvantages.

St Andrew s Hospital, E 3 A BARBARA FIELD

DOSAGE OF LOCAL ANÆSTHETICS

SIR,—Professor Macintosh and Dr Bannister, in their letter of July 18, reprove me for suggesting unnecessarily large doses of ‘ Percaine We are, of course, talking of two different things—the maximum permissible dose and the minimum effective dose after which we should strive I have not found the maximum dose of percaine stated in any textbook nor is there an adequate account of the treatment of overdosage It is a fact that a number of anæsthetists and surgeons in London had previously accepted 150 c cm of 1 1000 percaine as a safe dose An anæsthetist of exceptionally wide experience has recently told me of patients with jaundice and of one woman weighing only 4½ stone, all of whom had the full 150 c cm without ill effect There is no account in the published work of convulsions occurring in patients who had had percaine alone It has been suggested that the convulsions are due to asphyxia This is not improbable in the first case I described , the second two had nitrous oxide and oxygen in routine proportions and their breathing was not unusually shallow

Since meeting with these cases I have used considerably smaller doses than the maximum I suggested, but my impression has been that they have not been quite so effective A subcostal block takes a large quantity of anæsthetic , many prefer an intercostal block which can be effected with some 70–80 c cm Nerve block for laryngectomy is not really comparable, and there can be few anæsthetists fortunate enough to have seen a sufficient number of cases to elaborate a routine method of anæsthesia

Dr Clendon (Aug 1) raises the question of delayed detoxication from liver damage We do not know that the liver is the only, or even the most important, site of detoxication of percaine Recent work suggests that in some of the barbiturates the liver is not essential for this purpose (Schiefley, C H and Higgins, G M *Amer J med Sci* 1940, 200, 264 Kohn Richards, R and Appel, M *Anesth. & Analges* 1941, 20, 64) In my

Annabella J McGowan, A B McGrigor, J S McNair, J J Macneil, E A Malkin, Gwyn Martyn, R M S Matthews, Helen M Mayer, Grace E Mellows, S J T Merryfield, R B Meyer, R G Moore, K C Morris, H O Mukerji, C A B Murphy G C Myddelton, G J Myers, J F Neil, Leigh Neville, J L Newman, H A B, Nicholls, J C Nixon, C L Noble, Deirdre R B O'Brien, Richard Oddy, A F Ollerenshaw, H F Osmond, D A H O'Sullivan, Ralph Owlett, Nancye M Park, H M Parsons, A J Partridge, J P Patel, V G Patel, Peter Pattison, J P Paul, J D Paulett, J F Pearce, K G Pendse, E S Perkins, J A Peters A B Philip, Jacob Phillips R M Pitts, Francis Pollak, J M B Pooley, Alison C P Porter, E C Poulton, Charles Pownall, T J G Price, Mary Pringle, P E Prudhoe, R T M Puddicombe, S H Purser, I M Ramsden, A P H Randle, P K Renshaw, A S Riddell, D S Ridley, Dorothy Roberts, D J Robertson, W C Robinson, Watson Rogers, Glenys M Roper Hall H M J Rowan, A J D Rowlands J H B M Rowlnods, J K Rowntree, P F Rudd, D C Sachdeva, J G Salter, M C Sanyal, Irene M Sarner Erich Schindel, G B D Scott, Sophy H L Scott, T O Scudamore, D E Sharvill, C H Shaw, M P Sherwood, Duncan Shiers Marks Shrieber, G A Silley, W B G Simmonds, J H Simpson, N R W Simpson, J F P Skrimshire, R D Slack, A P Smith, H N Smith, R S Smith, W A Smurthwaite, P R Sondhi, V H Springett, H G Stack F H Staines P S Steen, B A F Stephens, D N Stewart J G Stewart L V Sthyr, Alan Stoddard, J C Swanson, V R Tadros, G H Templeman, D C Tennant, M N Teubes, H O Thomas, B A Thompson, J R Thompson, A L Thrower, D C Thursby Pelham, R H Townshend, Bernard Townsley, R N Tronchin James, A F Tuboku Metzger, S G Tuffill Leslie Turgill, G S Udall, G H Valentine, A E Wall, D K T Wallace, G T Wallace, A D J Watt, G H Wattley, N C Welply, J C N Westwood, E P Whitaker, D A White, E N Whitley, R U Whitney, H G Whitworth, B F Wickham, Mark Wilks, D I Williams, J I Williams, T M Williams, L A H Willson, Anna M T Wilson, F P Winbourne, J L Withey, Geoffrey Worden, G H Wright, H B Wright, J K Wright, H J Young, and Alwyn Zoutendyk

The following diplomas were granted jointly with the Royal College of Physicians

DOMS —Margaret L Clay, K D Foggitt, S S Freedman, D P Gurd H E Hobbs, M B Longinotto, W T C Lumley, G O M Neatby, R L Richards, and P M Wood

DMR —F H Bonnell, G C D Evans, R C M Hadden, H J Johnson, Margaret D Snelling, and J H Stranger

The honorary medal of the college has been awarded to Lord Nuffield in recognition of his service in "assisting the improvement of natural knowledge and of the healing art and of his many liberal acts and distinguished labours inspired by the desire to advance the science and practice of medicine and surgery" The medal was instituted 140 years ago and this is the nineteenth occasion on which it has been awarded

D T M & H

The committee of management of the Conjoint Board have decided to discontinue the examinations for the diploma in tropical medicine and hygiene until further notice

King Edward's Hospital Fund

In the last year the Fund has distributed £320,000, and receipts were over £280,000 Since its foundation the fund has distributed over ten million pounds

Medical Superintendents' Society

A meeting of the executive committee will be held at the Midland Station Hotel, Derby, on Saturday, Aug 15, at 2 15 PM

Awards for Nursing

Over 10,000 members of the Civil Nursing Reserve have now earned good service awards A number have also qualified for the special award presented to those who have given service in nursing patients suffering from tuberculosis or infectious diseases The reserve now has over 28,000 members in whole time employment and 18,000 in part time

Army Dental Service

Colonel A B Austin has been appointed director of the Army Dental Service, in succession to Major General D Clewer, who retires on Aug 31

High-frequency Apparatus

The Home Office has relaxed the order forbidding any person from possessing or using a high frequency apparatus with an output of over 10 watts except under permit from the Post master General Hitherto permits have only been issued to hospitals and similar institutions, but under the new order any person, including aliens, may apply to the Postmaster General for a permit, which will not, however, be issued until the applicant has installed a screen and mains filter in accordance with Post Office specifications Applications should be addressed to the Engineer in Chief, Radio Branch (W 2/8), General Post Office, Harrogate, Yorkshire, who will also give particulars of the screening required

Medical Casualties

The following casualties have been announced

Died of Wounds —Surgeon Commander James Michael McNamara, MB NUI, HMS *Hermes*

Missing presumed killed —P/T/Surgeon Lieutenant J D James, MRCS, RNVR, MHS *Belmont*

Prisoners of War —WS/Captain W G H Allen, MD Durh, T/Major J D Fraser, MD Glasg Major G F Harrison, MB Lond, Major J H Prain, MB St And, WS/Captain A C P D Thomson, MB Edin, Lieutenant J W Anderson, FRCSE, T/Major J D A Gray, MB Edin, Captain A F Hutchison, MB Durh, WS/Captain J A MacLeod, MB Glasg, T/Major O G Prosser, MB Aberd, Lieut Colonel J K Steel, and T/Surgeon Lieutenant R St C Mooney, MB Dubl, RNVR, HMS *Bedouin*

Missing —Major J A G Carmichael, MRCS, and Captain Geoffrey Lancaster, MB Manch (in the Middle East), and Surgeon Lieutenant J G Reed, MRCS, RNVR (after the evacuation of Singapore)

Dr Elsie Crowe is now officially presumed a prisoner of war in Sumatra

Medical Honours

The George Medal has been awarded to Squadron Leader Frank George Mogg, M R C S, Auxiliary Air Force

One night in May an aircraft crashed on the edge of an aerodrome and immediately burst into flames Three members of the crew were thrown clear of the wreckage and killed, a fourth managed to extricate himself from the tail turret A wireless operator was, however, trapped in the blazing fuselage, and Squadron Leader Mogg, clad only in overalls over his pyjamas, went into the blazing wreckage to rescue him The aircraftman who accompanied Mogg lay on the floor and using a greatcoat as a shield was able to afford some protection while he administered morphia to the injured operator During the time the officer and airman were working in the wreckage two oxygen bottles exploded within a few feet of their heads and there was grave danger that others might have done so at any time Squadron Leader Mogg was badly scorched and sustained burns to his hands and wrists, but he accompanied the dying wireless operator by ambulance to hospital some six miles away He then fainted and had to receive medical attention

The DSC has been awarded to T/Surgeon Lieutenant G P Fahrni, MD, RCNVR, for great bravery and devotion to duty

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

Appointments

SMITH A H D, MB EDIN, consulting surgeon to the Llanelly District General Hospital

The following examining factory surgeons have been appointed —

- STEPHEN, J H, MB ABERD Thame, Oxfordshire,
- GRAY, A P, MB ABERD Wingate, Durham,
- THOMPSON HILL, W A, MRCS Llanrwst, Denbigh,
- KIDD, J L MB GLASG Belshill Lanark,
- COOPER, J D, BA CAMB, MRCS Princes Risborough, Bucks, and
- MITCHESON, G F L, BM OXFD Shoreham, Sussex

Colonial Medical Service —The following appointments are announced —

- GUTHRIE, J P MRCS MO, Kenya
- LUCEY, J F, MB CAMB MO, Tanganyika Territory
- MICHIE, CHARLES, MB ABERD MO, Sierra Leone
- DE BOER, H S, MRCS, DPH, DTM & H DMS, Uganda, and
- PATTON, W H G, MB LPOOL MO, Kenya

Births, Marriages and Deaths

BIRTHS

HARDIE —On Aug 3, at Great Malvern, the wife of Captain A W Hardie, RAMC—a son

HUTSON —On Aug 4, at Newcastle on Tyne, the wife of Captain C S M Hutson RAMC—a daughter

SLOAN —On July 26, at Landour Mussoorie India, the wife of Lieutenant T B M Sloan, IMS—a daughter

STRANGE —On Aug 4, at Newcastle on Tyne, the wife of Mr F G St Clair Strange, FRCS—a son

MARRIAGES

GUILD—INNES —On Aug 5 in London, William John Forbes Guild, FRCSE, surgeon lieut commander RN, to Joan Elisabeth Innes

HILL—CUMMING —On March 20, in Lagos, Thomas Rowland Hill major RAMC, to Janet Sybil Cumming

DEATHS

GRANGER —On Aug 4 at Exmouth, Thomas Arthur Granger, CMG, MB EDIN, colonel IMS, retd

JERRARD —On Aug 7, in Exeter, John Henry Frederick Jerrard, MB CAMB of Honiton, Devon

THOMPSON —On Aug 4, James Thompson, MC, MB EDIN, FRCSE, JP, of Devizes, aged 47

VERNON DAVIES —On Aug 4, at Tunbridge Wells Arthur Vernon Davies, OBE, MB MANC, MP for Royton (Lancs) 1924–31, aged 70

LOCAL TREATMENT OF INFECTED WOUNDS WITH SULPHATHIAZOLE

H N GREEN
M A CAMB, M D, M SC SHEFF
PROFESSOR OF PATHOLOGY IN THE UNIVERSITY OF SHEFFIELD

T PARKIN
M B EDIN
CLINICAL ASSISTANT ROYAL INFIRMARY, SHEFFIELD

IN spite of the wide use of sulphonamides locally, either prophylactically or in the treatment of established infection, the value of the treatment is still not accurately known and widely different opinions are regularly expressed (see *Lancet* 1942) Many seem to think, largely on the basis of results with virulent animal infections, that it is of great value in prophylaxis but has no place as a curative measure The difficulties of assessing its value are considerable and a final assessment may only be obtained from a statistical analysis of a very large number of comparable wounds Nevertheless, to discount this treatment altogether, as some do, suggests that a lack of knowledge of the mode of action of the sulphonamides is still very general among clinical observers

It is essential to recognise that these drugs have a direct antibacterial action and that their curative action is due entirely to this, and not to any indirect action on the body tissues generally The most important proof of this was the finding by Woods (1940) that *p*-aminobenzoic acid antagonised the action of sulphanilamide Fildes (1940) postulated that the sulphonamides act by blocking the enzyme concerned in the further utilisation of *p*-aminobenzoic acid in the bacterial cell This theory has received much experimental support from several workers, including Green and Bielschowsky (1942) The latter workers showed that the sulphonamide itself, and not some derivative of it, is most probably the active substance, and that the ether-soluble anti-sulphanilamide substance in bacteria is almost certainly *p*-aminobenzoic acid The demonstration of its mode of action is the most conclusive evidence of its purely direct effect, but the following facts (there is no space to discuss the now extensive literature) give additional support to it (1) Sulphonamides are effective in synthetic media (i e, in the absence of tissue extracts) (2) Their in-vitro activity in most instances parallels that in vivo (3) Numerous investigations have shown that they have no effect on the cellular or humoral defence processes of the body (4) Local treatment of experimental wounds is effective against many types of infection, both prophylactically and curatively From the experimental standpoint, therefore, there is every reason for expecting the sulphonamides to be efficient local bacteriostatic agents in human infections

TABLE I—DIMINISHING INHIBITORY EFFECT OF *p* AMINOBENZOIC ACID ON SULPHANILAMIDE, SULPHAPYRIDINE AND SULPHATHIAZOLE DEMONSTRATED IN INOCULUM OF *Brucella paramelitensis*, 2×10^4 COCCI PER ML

*p*AA (mg per 100 c.cm)	Percentage of incident light absorbed at 48 hr		
	Sulphanilamide 1/1000	Sulphapyridine 1/1000	Sulphathiazole 1/1000
0	0 (4)	0 (4)	0 (∝)
20	52	36	0 (4)
2	48	40	0 (5)
0 2	52	40	0 (12)
0 02	59	35	0 (∝)
0 002	48	17	0 (∝)
Broth controls	51	46	48

Figures in parentheses indicate number of days at which turbidity first appeared. *p*AA = *p* aminobenzoic acid

Another widely held and fallacious view is that the different sulphonamides are specific for certain bacterial species The fact is that the bacteriostatic effect on any species is directly related to the capacity of the compound to block the enzyme whose substrate is *p*-aminobenzoic acid Sulphanilamide, sulphapyridine and sulphathiazole require increasing amounts of *p*-aminobenzoic acid to antagonise them (see table I) and the increase is proportionately the same whatever the test organism Quantitative studies on a number of organisms show that the amounts required are in the order of roughly 1 5 50 and the ratios of the bacteriostatic potencies of the three compounds is of roughly the same order with comparatively small variations for different organisms These variations are due to the action of the heterocyclic half of the molecule of sulphapyridine and sulphathiazole (e g, the thiazole group on staphylococci) which gives them a more selective action on certain bacteria It must be stressed that from the clinical aspect these differences in species susceptibility are relatively unimportant At similar concentrations the ratio of the bacteriostatic powers of sulphathiazole and sulphanilamide is roughly 50 with *Staphylococcus aureus* and yet the ratio is only reduced to 25 with *Bacterium coli*, an organism which is much more sensitive to sulphonamides in general In other words, sulphathiazole is the sulphonamide of choice in staphylococcal (and any other type not highly sensitive to sulphanilamide) infections mainly because it is the most effective sulphonamide generally available in this country

The therapeutic effect of these compounds when given by mouth is modified by their rate of absorption, but in local use the modifying factor is their solubility in the tissue fluids The much greater solubility of sulphanilamide (cir 1/70) as compared with sulphathiazole (cir 1/700) possibly wholly offsets its weaker bacteriostatic action since the ratio, $\frac{\text{sulphonamide concentration}}{\text{no of bacteria killed}}$, falls rapidly with increasing concentration of the drug (Green 1940) The period for which the bacteria are exposed to a saturated solution is, however, a more important factor than the solubility of the compounds, if their in-vitro potencies at saturation levels are not widely different Bacteria, if still viable, rapidly recover from sulphonamide inhibition, so that the optimal effect is obtained by maintaining a high concentration continuously until most of the bacteria are killed directly by the drug or by phagocytosis Under these conditions, provided complete access can be obtained, local treatment ought to be more effective than general, for, given orally or parenterally, the concentration of sulphathiazole in the infected area will not be more and may be very much less than a tenth of that reached after local application A high local concentration is also often essential, since many bacteria (e g, *Staph aureus, Bact coli*) which are relatively insensitive at the concentration reached in the blood (say 1/10,000) are quite sensitive to a much higher concentration (say 1/1000) It is important, in fact, to recognise that all bacteria are sensitive in some degree to the bacteriostatic action of the sulphonamides, though in some instances (e g, *Pseudomonas pyocyanea*, *Bacillus subtilis*) the concentration must approach saturation point before the effect is really significant

Another very real advantage of local treatment is that the danger of toxic effects is slight Even with continuous application to large, infected wounds the blood concentration in our series did not rise much above 2 mg per 100 c cm and it was usually below 1 mg The hazards of systemic sulphonamide treatment, in particular the renal complications, are thus obviated

OBJECTIONS TO LOCAL APPLICATION

The optimal conditions for sulphonamide therapy—i e, a continuous high concentration without systemic damage—ought to be attained by local application What are the objections? They may be briefly classified as follows

(1) Pus and tissue exudates have an anti-sulphonamide action This is due to anti-sulphonamide factors (probably chiefly *p*-aminobenzoic acid) released from bacteria and also from digested tissues, the amount supplied by each is not known and will vary with the type of bacteria and the degree of tissue destruction This is probably the main factor tending to prevent the antibacterial effect of the sulphonamides, but the same antagonism must play a part when the drug reaches the area via the blood-stream, though possibly not to the same extent On the other hand, the higher concentration of the compound attained in local treatment demands a proportionately greater amount of anti-sulphonamide factor to neutralise its effect, and, if the infected area is kept as free from exudate as possible by

thorough removal before each treatment, the clinical results suggest that this anti-sulphonamide action is not usually sufficient to completely neutralise the effect of the sulphonamide Provided that even slight bacteriostasis is achieved, the diminishing number of bacteria will cause a reduction in the supply of anti-sulphonamide factor from both bacteria and tissues, and, so long as continuous saturation is maintained, progressive improvement must occur once the balance has changed in favour of sulphonamide If pus formation is excessive and an early response to treatment does not occur, repeated cleansing, with fresh applications of the powder, is necessary until the local infection shows signs of subsiding In our series of cases obvious improvement usually set in in the first few days Failure is probably often due to a lack of persistence in treatment in the initial stages when an excessive amount of anti-sulphonamide factor is preventing rapid bacterial destruction

(2) The sulphonamides are absorbed from the local site, and in the case of the most soluble compound, sulphanilamide, this absorption is rapid Viable organisms will then rapidly multiply again and it is theoretically possible that the renewed growth may be greater than the normal, for there is some evidence that very low concentrations of the sulphonamides may have a growth-stimulating action on bacteria (Green 1940, Green and Bielschowsky 1942) This objection applies particularly to the prophylactic treatment of sutured or very deep wounds, and failure in these cases could be due to lack of complete sterilisation, before, or a fresh infection from the blood-stream after, the drug has been absorbed. Theoretically prophylactic treatment should aim at using the largest possible quantities of the drug, with a preference for the more insoluble compound, but recent work (see *Lancet* 1942) suggests certain dangers in this method In already infected wounds treatment should never allow of a period in which a surface film of powder is not present

(3) Local damage to the tissues by a saturated sulphonamide solution is a theoretical danger Actually, it would appear to be insignificant compared with the effect of other antiseptics Glynn (1941) has shown in rabbit granulation tissue that a barely significant inhibition of fibroblast proliferation is produced by sulphathiazole and sulphapyridine, but not by sulphanilamide Sulphathiazole has no toxic action on striped muscle, whereas sulphanilamide and sulphapyridine have a slight but definite one. Tissue-culture work and our own experience with animals and man indicate that they are comparatively harmless compounds to the tissues

(4) The development of resistant strains of bacteria is probably a real danger, but here again the danger should be less with local than with systemic treatment Strongly resistant strains only arise if viable bacteria are exposed to sulphonamides for a few weeks, but the resistance increases progressively from the time of initial exposure (Green 1940) The chance of this complication arising is much diminished if a continuous saturation with the drug is maintained from the start, thereby rapidly reducing the number of the pathogenic organisms present Intermittent or spasmodic treatment will favour the development of these resistant organisms An important point is that resistance to sulphathiazole is less easily developed than to either sulphanilamide or sulphapyridine One of us (H. N. G) has found that it was impossible, with the strain of *Bact coli* used, to produce by "training" in sulphathiazole a strain significantly resistant to sulphathiazole, though it became strongly resistant to sulphanilamide Preliminary observations with other bacteria suggest that resistance is less easily developed with sulphathiazole than with sulphapyridine or sulphanilamide Sesler and Schmidt (1942) report a similar finding with the pneumococcus This property of sulphathiazole may well be one of the main factors in its greater therapeutic effect

(5) Hawking (1941a) has shown that a sulphonamide applied locally penetrates only a few millimetres into the infected tissue and therefore may not reach viable bacteria, which nevertheless are accessible via the blood-stream It seems probable, however, that provided the bacteria in the necrotic tissue and exudate, which is the actual culture medium, are destroyed, the deeper granulating zone with its known capacity for combating infection is easily capable of overcoming the deeper residual infection The rapid development of healthy granulation tissue actually observed during this treatment suggests that the reduction in toxin production in the surface exudate allows this tissue to rapidly assume its normal protective function

The balance of experimental evidence is strongly in favour of using local treatment in localised infections Only in this way in the presence of infection can a concentration be attained which is likely to be lethal to the hæmolytic streptococcus, pneumococcus and Neisseriæ, and strongly inhibitory to *Bact coli*, *Staph aureus* and even to *B proteus* and *Ps pyocyanea* Of the sulphonamides at our disposal, sulphathiazole, for the reasons given, was used in the clinical trials, of which a condensed account now follows

CLINICAL TRIALS

Methods —The wound was gently swabbed free of pus and loose debris using gauze soaked in normal saline , it was then gently dried with dry gauze Sulphathiazole powder, which was not sterilised (an error now rectified) was sprinkled from a sterile container, covered with one layer of gauze, over the surface to form a layer roughly $\frac{1}{8}$ in thick Any pockets or undermined edges were carefully filled from a small sterile spatula When deep pockets or undermined areas existed an insufflator was used It was then covered with several layers of dry gauze and finally with a square of gamgee tissue In plaster cases with a "window" a firm bandage was applied to counteract "window œdema" The treatment was repeated every 2, 3 or 4 days, the aim being to maintain a continuous layer of powder in contact with the wound It should be specially noted that the treatment was not stopped when signs of infection had disappeared but was continued, where possible, until wound healing was completed Each treatment was carried out by one of us personally, a point of possible significance in the results obtained Swabs from infected areas were cultured on solid and liquid media, with and without *p* aminobenzoic acid (0 2 mg per 100 c cm)

For reasons of space detailed records of only 4 of the 16 cases are given * They illustrate the effect of the treatment on three types of bacterial infection, but otherwise were chosen arbitrarily The main features of all the cases are summarised in table II

CASE 1 —A man aged 38 was struck on the left leg by a steel bar Examination revealed an irregular flesh wound extending from the external condyle of the femur to the junction of the upper and middle third of the leg There was a compound fracture of the tibia and fibula The wound was excised and sutured after inserting 'Vaseline' packs and a rubber drain, and the fracture was reduced and immobilised in plaster The next day the temperature rose and sulphapyridine, 6 g daily, was given by mouth for the next 14 days On the 16th day after injury the packs were removed from the wound, which was found to be grossly infected and discharging pus copiously He was still feverish and sulphapyridine in the same dosage was given for a further week A month after the injury the wound was still grossly infected and the knee joint was swollen From this time the wound improved very slowly and 10 weeks after the injury the temperature settled He was discharged after 12 weeks in hospital with the leg in plaster, with a window for continuation of the acriflavine dressings which had now been applied for some weeks

He was referred to us for treatment 22 weeks after the injury There was a longitudinal wound, 6 in × 2 in and $\frac{1}{2}$ in deep, over the upper end of the tibia The wound was grossly infected with a free purulent discharge and with no sign of attempted healing , there were several sinuses leading down to the ununited fracture There was slight fever (99°–100° F). Cultures of the pus showed *Staph aureus* and *B proteus* Local treatment with sulphathiazole was begun The wound was thoroughly cleaned and final traces of exudate removed with saline swabs followed by the application of 4 g of the powder, distributed uniformly over the surface When the wound was examined 4 days later obvious healing was in progress , the amount of pus was much reduced and healthy granulations were evident at many points The wound was again treated with the powder (5 g) Nine days after beginning the treatment the wound was quite clean with abundant granulations covering it and commencing epithelial growth at the edges , the bacterial flora remained unchanged

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* The detailed records of all the remaining cases and some photographs may be seen at the Medical Research Council Offices, School of Hygiene and Tropical Medicine, London A limited number of copies of the case records are available from the same source for research workers

TABLE II—INFECTED WOUNDS TREATED LOCALLY WITH SULPHATHIAZOLE

Case no	Age (yr)	Injury	Surface wound	Time infected before treatment (days)	Initial treatment	Causal bacteria	Elimination of causal bacteria (days)	Total sulphathiazole (g)	Surface infection (days)		Remarks
									Subsiding	Absent	
1	38	Comp fract. tib and fib	6 in × 2 in Sinuses present	152	Acriflavine; sulphapyridine (126 g. orally)	*Staph aureus*	N	21	5	15	Wound healed 28th day of treatment except for few small sinuses See case history
2	57	Laparotomy wound	5 in. × 4 in	18	Sulphanil- (16 g. orally)	*Strep hæmolyticus*	11	15	3	15	Uninterrupted healing of wound
3	51	Comp fract. tib and fib	3 in. diameter,	21	Winnett Orr	*Staph aureus*	N	18	2	13	Surface wound healed, after removing loose sequestrum, by 37th day of treatment.
4	18	Comp fract femur simple fract. tib and fib	Supracondylar thigh amputation	5* 19†	Sulphanilamide (28 g orally)	*Strep hæmolyticus ; Staph aureus*	N	45	4	15	At initial operation and at thigh amputation wounds packed with sulphanilamide See case-history
5	33	Fract. tib and lacerated calf	Guillotine amputation at mid thigh	4	Sulphapyridine (40 g orally), AGGS	*Cl welchii*, *Staph aureus*	23	22	13	23	Oral sulphapyridine for 6 days after local treatment began Wound packed with sulphanilamide at time of amputation Healed 46th day of local treatment
6	30	Comp fract. tib and fib	Guillotine amputation at mid-thigh	17	Winnett Orr sulphapyridine (72 g orally)	*Staph. aureus*, *Cl sporogenes*	7	15	3	7	Initial excised wound and amputation wound packed with sulphanilamide at time of operation
7	62	Arthrodesis of knee-joint	Guillotine amputation at mid thigh	65	Sulphapyridine (159 g orally), acriflavine	*Staph aureus*	N	30	7	14	Uninterrupted recovery Wound healed by 28th day
8	18	Comp fract femur	Guillotine amputation at mid thigh	60	Sodium sulphapyridine sulphapyridine orally , eusol, acriflavine	*Strep hæmolyticus*	N	30	3	18	Wound healed by 50th day
9	47	Shrapnel wound of wrist	Dorsum of wrist, 2 in diameter	8	Acriflavine, sulphapyridine (28 g. orally)	*Staph aureus*	N	3	1	5	
10	34	Fract. phalanx-lacerated wound	Whole of finger	28	Winnett Orr, acriflavine	Probably *Staph. aureus*	N	6	2	7	Amputation of stiff finger
11	40	Comp fract. tib and fib	2 in × 3 in	105	Winnett Orr cod-liver oil dressings	*Staph aureus*	N	13	2	12	Initial injury 4½ yr ago with recurrent infection Uninterrupted healing of wound with 16 days treatment
12	23	Third-degree burn of foot	Nearly half dorsum of foot	19	Gentian violet, cod-liver oil dressings	*Ps pyocyanea*	23	20	1	19	See case history
13	55	Traumatic amputation of lower legs	Amputation below L. knee	20	Sulphapyridine (36 g orally)	*Staph aureus*	N	60 (sulphanilamide)	8	18	Both amputation wounds packed with sulphanilamide at time of operation Amputation stump on R leg was much less severely infected treated with acriflavine Skin graft on L at 20 days, healed a month later
14	13	Excision of chondroma of scapula	5 in × 2 in.	12	Open drainage	*Staph albus* (pathogenic)	N	9	2	14	See case-history
15	44	Open reduction of fract. spine	8 in × 1 in	10	Sulphapyridine (34 g. orally)	*Staph albus* (pathogenic)	N	8	2	8	Sulphathiazole given orally 2nd to 5th day of local treatment Wound completely healed by 10th day

N = Not sterile while open wound still present.
AGGS = Anti gas gangrene serum.

* After final amputation
† After first operation wound.

A further 4 g of the powder was applied and 4 days later a few small sequestra near the surface were removed. By the 15th day of treatment the whole surface of the wound was covered with epithelium except for the openings of a few small sinuses which were not discharging More powder (4 g) was applied and the treatment repeated on the 19th day. By the 28th day the wound was soundly healed except for the small sinus openings; the fractures were united From now on the sinuses occasionally discharged a little pus from which *Staph aureus* was grown. He was discharged after 7 weeks in hospital with the leg in a fresh plaster. When seen 3 weeks later the wound still remained soundly healed but the skin was reddened from the irritation of small amounts of pus coming from the sinuses.

He was admitted at intervals for the removal of small superficial pieces of necrotic bone. At the present time (a year later) there is still a little discharge from one sinus, but the wound remains healed.

CASE 4.—A youth aged 18 was riding a motor cycle when he collided with a tramcar and sustained a compound fracture of the right femur, in the lower third and a simple fracture in the middle of the right tibia and fibula A portion of the femur protruded through a 4 in. longitudinal wound commencing 3 in. above the knee on the medial aspect The wound was excised and sutured after packing with sulphanilamide powder, the fractures reduced, and the whole limb immobilised in plaster The temperature rose immediately after the operation to 100° F., and sulphanilamide, 4 g daily, was given by mouth for a week, but the temperature continued fluctuating between 99° F. and 102° F. His general condition was poor The day after the operation the thigh showed considerable œdema, the foot was cold and pale and without arterial pulsation The plaster was split but the foot showed no sign of returning viability and on the 6th day the lower leg was amputated 5 in below the knee joint and a blood transfusion given Signs of infection in the stump became obvious on the 9th day after injury and the knee joint was distended with fluid The temperature was now rising to 103° F and on the 14th day there was a secondary hæmorrhage from the stump This was treated effectively and a further transfusion of whole blood given On the 15th day a further hæmorrhage occurred and since the stump was grossly infected a re amputation was done 3 in above the femoral condyles, the wound packed with sulphanilamide and the flaps left unsutured Pyrexia (100° F) continued and by the 20th day after the injury the stump wound and flaps were covered with pus and discharging profusely Cultures grew *Streptococcus hæmolyticus*, *Staph aureus* and *B proteus*

Local treatment with sulphathiazole was begun 5 days after the amputation and 20 days after the original injury, 10 g was needed to cover the infected area completely A further 11 g was applied 4 days later, and 6 hours after the application the blood sulphathiazole (total) was 0 35 mg per 100 c cm and after 24 hours 0 8 mg per 100 c cm Further applications of 10, 5, 5, 2 5 and 2 g were made on the 6th, 9th, 15th, 22nd and 28th days of treatment Blood sulphathiazole values on the 7th, 10th and 16th days were 0 25, 2 2 and 1 6 mg per 100 c cm By the 6th day of treatment the temperature was normal and the wound was granulating freely and much cleaner, showing only specks of pus in small pockets, cultures from which grew *Staph aureus* and *B proteus* Rapid improvement was maintained and by the 15th day the wound was quite clean and covered with thick granulation tissue In spite of the absence of clinical infection, *Strep hæmolyticus* and *Staph aureus* were grown from a swab of the wound surface The *Strep hæmolyticus* now showed an increased in vitro resistance to sulphanilamide but not to sulphathiazole By the 19th day of treatment the wound edges were rapidly drawing in, and, though there was no obvious suppuration, culture grew *Ps pyocyanea* and a few colonies of *Staph aureus* On the 29th day a few colonies of *Strep hæmolyticus* only were grown from the wound swab The wound area continued to diminish and on the 38th day an operation was performed to reconstitute a weight bearing stump The surgical wound remained healthy but still grew a few *Strep hæmolyticus*, and on the 8th day after this final operation it broke down slightly and discharged a little pus from which *Strep hæmolyticus* in pure culture was grown The wound healed again in a few days after two applications of sulphathiazole and when last seen the patient was waiting to have an artificial limb fitted

Case 12 —A man aged 23 sustained a third degree burn of his left foot when a hot bar fell across his boots Blue dye (probably gentian violet) was applied to the burn at work and he then attended the hospital casualty department where it was dressed daily with cod liver oil for 23 days

Owing to complete lack of healing and increasing signs of local infection he was admitted to hospital on the 24th day after injury There were gangrenous patches on the dorsum of the 2nd and 3rd toes and half the great toe, and a sloughing, severely infected ulcer over a third of the dorsum of the foot with the extensor tendons visible in the purulent exudate at its base Cultures grew a profuse growth of *Ps pyocyanea* and also colonies of *Staph aureus* The area was cleaned and 5 g of sulphathiazole applied After 2 days treatment the wound was much cleaner, now only speckled with pus, and a portion of the gangrenous tissue on the great toe was separating Cultures grew *Ps pyocyanea* and a few colonies of non-hæmolytic streptococci Sulphathiazole (5 g) was again applied By the 6th day granulation tissue could be seen at the wound edges and the necrotic tissue had separated further The wound, though healing, still showed suppurating foci from which *Ps pyocyanea* and *Staph aureus* were grown The infected area was again covered with sulphathiazole By the 10th day the improvement was striking, the whole wound, with the exception of the toes where gangrenous tissue was still separating, was covered by very vascular granulation tissue It was treated with sulphathiazole and again on the 15th day and 19th day On the latter date there was no sign of sepsis, and swabs on this and the following day were sterile On the 23rd day slight epithelial growth could be seen at the wound edges and the gangrenous tissue had completely separated The wound remained clean but epithelial growth was very slow, so that on the 40th day a skin graft was performed with good result A month later the foot was quite healed and later the useless 2nd, 3rd and 4th toes were amputated

Case 14 —A girl aged 13 was admitted to hospital for excision of a chondroma of the inferior angle of the right scapula The tumour, about 1 in in diameter, along with the inferior angle of the scapula, was removed The next day the temperature rose and fluctuated between 98° F and 100 5° F for the following 3 days On the 4th day after operation the wound was tense and bulging, with beads of pus exuding from it The tense sutures were removed and the gaping wound discharged pus profusely The temperature fell to normal for a day or two but rose to 101° F on the 9th day when the wound was suppurating still more freely A pure culture of *Staph albus* (coagulase positive) was grown from the pus

On the 12th day after operation there was an elliptical wound, 5 in long and 2 in wide and about 1 in deep, covering the vertebral border of the scapula, it was covered with a thick purulent exudate It was cleaned and packed lightly with sulphathiazole (2 g) The temperature fell to normal the same day and remained there By the 2nd day of treatment the wound was already much cleaner A further application of 2 g of sulphathiazole was made and the treatment was repeated every 2 days until the 14th day On the 4th day suppuration had practically ceased and signs of healing were present at the upper and lower poles The wound continued to heal rapidly and by the 11th day it was bridged across at its widest part by a band of granulation tissue largely covered with epithelium *Staph albus* (coagulate positive) in pure culture could still be grown Progress was uninterrupted from now on and by the 14th day there was no sign of clinical infection There was an exuberant growth of granulation tissue which appeared to prevent complete epithelialisation However, after occasional cauterisation with silver nitrate, the wound was completely epithelialised by the 24th day The patient was discharged 28 days after operation with the wound completely healed

ANALYSIS OF CASE-HISTORIES AND FINDINGS

At the start we intended to treat only those infected wounds which had shown no improvement with other treatments over a long period It was however impossible to find sufficient cases of this kind and there are only 4 out of 15 (cases 1, 7, 8 and 11) which were of very long duration In 6 the infection persisted without improvement for periods of 17–28 days and the remaining 5 were of from 4 to 12 days' duration The main factors in the choice were that the wound should be large, severely infected and showing no signs of response to the prescribed treatment Up to the time of beginning local sulphathiazole we had no responsibility for the treatment A fair number of small infected lesions such as boils, bed sores, &c were also treated with excellent results but we have only included wounds so severely infected that a rapid response to treatment would be of possible therapeutic significance

In every case the infection had been treated by other methods before the local application of sulphonamide Local treatments included immobilisation in plaster, fomentations, antiseptics, cod-liver oil dressings, and combinations of these The majority (10 out of 15) had received oral or intravenous sulphonamide, usually in full doses In 2 only (cases 10 and 15) this was continued for a few days after the local sulphonamide treatment was started Signs of systemic infection usually abated but the local infection persisted or even developed in spite of the oral treatment In some instances (cases 3, 4, 5, 6 and 13) the operation wound, which was not clinically infected at the time, was packed with sulphanilamide It would appear that a single prophylactic application, at any rate in a patient infected elsewhere, may be useless, and under these conditions vigorous local treatment should be continued, if possible, until definite signs of healing appear

It was hoped to find comparable infected wounds in the same person, one of which could be used for a control treatment, but the difficulties are great, as is illustrated by the only possible case (13) in this series Two below knee amputation stumps were infected but one wound was much more extensive and much more severely infected, and showed a much heavier growth of *Staph aureus* than the other It was impossible accurately to assess the value of two treatments under such conditions It should be noted that, in this one case, sulphanilamide instead of sulphathiazole (owing to a tempora page in supplies) was used and our impression was that the response was not so impressive as in similar cases treated with sulphathiazole Another severely infected (anaerobic streptococcus) amputation stump, not included in this series, also rapidly responded to sulphathiazole after a very slow response to 2 weeks' treatment with sulphanilamide

Wound cultures were made at short intervals immediately before the application of sulphonamide Although duplicate cultures were made in media containing *p*-aminobenzoic acid, the same types of bacteria were always grown in both cultures Care was taken not to grossly contaminate the swab with sulphonamide and it seems that the small amounts occasionally conveyed to the media were never sufficient to inhibit growth

In only 4 of 15 cases did the organism considered to be primarily responsible for the infection disappear completely during the course of treatment (see table II) A pathogenic staphylococcus was the commonest primary infecting organism in this series (10 of 15), and in only one instance (case 6), did the treatment apparently result in the destruction of all the organisms present Bacteriological evidence of infection continued until the wound healed in 2 out of the 3 cases (2, 4 and 8) infected with the *Strep hæmolyticus* In both instances in-vitro tests showed that they were somewhat more resistant to the action of sulphanilamide, but only slightly, if at all, more resistant to sulphathiazole 14 days after the treatment was begun In the single cases in which *Clostridium welchii* (5) and *Ps pyocyanea* (12) were considered to be the primary infecting agents the organisms could no longer be grown after 23 days treatment No wound became completely free of potential pathogens until healing was in an advanced stage

There was no obvious relationship in the early stages of treatment between the amount of growth on plate cultures and the rate of decline in signs of clinical infection When signs of infection had mainly disappeared the plate growths were usually not so heavy, but they gave little information about the related clinical condition This was obviously due to the crudity of the method, and if accurate bacterial counts on a wound surface were possible there is little doubt that they would show a progressive diminution during treatment The ordinary routine methods of culture are of little value for assessing progress, and from the clinical standpoint numerous cultures are a waste of effort On the other hand, if the clinical infection fails to subside under treatment in-vitro tests of the resistance of the infecting organism to the sulphonamide used as compared with that when first isolated, should be of real value in deciding whether to change the form of treatment If the resistance was high, another sulphonamide to which the resistance of the strain was shown to be less, or better, one of the new "biological" antiseptics, should be used No occasion for this change occurred in any case in our series

Determinations of the blood sulphonamide content were not made in all the patients, since it is already well established (Hawking 1941) that the figure never rises very high compared with that following oral administration in adequate amounts The maximum concentrations reached ranged between roughly 1 and 2 mg per 100 c cm (see case 4 report) The rate at which sulphathiazole is absorbed from the wound is not rapid enough to produce high blood levels This no doubt accounts for the fact that not one patient showed any toxic symptoms When it is appreciated that the amount of sulphonamide absorbed was usually less and rarely more than 1 g per day, this finding is not unexpected

Two noteworthy features in the healing process were considered to be related to the treatment First, there was a tendency in many cases to capillary hæmorrhage at the edges of the wound The bleeding was sometimes sufficient to suggest a secondary hæmorrhage but no large vessel was involved though it was sometimes necessary to insert a suture Secondly, the formation of granulation tissue often seemed to be exuberant and in some instances the tissue projected well above the surface of the wound It seemed to us that the presence of sulphathiazole was responsible for this excessive growth of highly vascular granulation tissue, which bled very easily and in a few wounds appeared to hinder epithelial growth In cases 12 and 13 it was necessary to complete healing by skin grafting, it was noteworthy how quickly the graft took and healed Mellon, McKinney and Rack (1942) found that sulphathiazole stimulated tissue-culture growth, and they suggest that stimulation of wound healing may be a partial explanation of the superiority of sulphathiazole in local staphylococcus infections

TREATMENT OF SEPTIC FOCI WITH WARM SATURATED SULPHONAMIDE SOLUTIONS

Green (1940) pointed out that bacteria which had been exposed to sulphanilamide were much more sensitive to the lethal action of heat Sulphanilamide was completely inactive at 0° C and there was a progressive increase in its bactericidal action as the temperature rose In the range 37°–40° C this increase in activity, using the same concentrations of sulphanilamide, was very striking It was indicated that this fact might have a clinical application Theoretically the application of a warm saturated solution of sulphonamide should greatly increase its effectiveness, mainly by increasing the local temperature but partly by increasing the concentration of the drug

The idea was tested by treating septic wounds of the fingers and hands in baths of sulphonamide solution The patient immersed the whole hand in a saturated aqueous solution (cir 1/90) of sulphanilamide sufficient to completely cover the septic wound and maintained at a temperature of 110°–120° F The period of immersion was 1–2 hours and it was repeated at 4-hour intervals The total period of immersion had to be determined individually so as to prevent the skin from becoming too waterlogged; the maximum daily period was 6 hours

Four grossly septic fingers and one septic hand, all of which had been freely incised and treated by immobilisation and acriflavine dressings for periods of 5–21 days without improvement, were given sulphanilamide baths In four of the five cases so treated improvement was progressive from the start, and within 4–10 days clinical signs of sepsis had gone and further surgical treatment (amputation or sequestrectomy) was carried out successfully In one patient with a septic hand the surface infection improved rapidly but it was necessary to make further incisions after 16 days treatment, after which rapid healing occurred Obviously, when the infected focus is not freely communicating with the surface the treatment is unavailing The result in one severely infected finger of long duration, which was treated in saturated sulphathiazole baths, was the most impressive of all, for the infection resolved in 5 days and amputation was done with safety 2 days later

We have lately extended the scope of this method by treating more varied types of infected wounds by allowing a saturated aqueous solution (cir 1/900) of sulphathiazole at a temperature of 110° F to drip upon the open wound The treatment is given for a continuous period of 1½–2 hours daily at the rate of 2 drops per second from a height of not more than 4 in After the treatment loose debris and sloughs are carefully removed and the area covered with sulphathiazole powder

Only a few cases have yet been treated in this manner but our impression is that the rate of improvement is greater than with any other method we have tried In one grossly septic amputation stump (20 days duration) with a bacterial flora of *Staph aureus*, an anaerobic streptococcus and *B subtilis*, local treatment with sulphanilamide powder for 16 days had no obvious effect, 5 days further treatment with sulphathiazole powder caused a slight improvement, but when this was reinforced with the drip treatment there was a striking improvement within 3 days

This aspect of the investigation is in its preliminary stages and the full details of our treatments with various sulphonamides will be reported later It is only mentioned because we think the early results justify its trial elsewhere, and rapid assessment of its value is of some urgency

CONCLUSIONS

The number of cases does not warrant any attempt at a statistical analysis of the details The main and important observation is that all, without exception of 14 severely infected wounds showed an early and progressive response to energetic and sustained local sulphathiazole treatment In the majority of cases this was evident during the first 3 days and in no case was obvious improvement delayed more than 13 days The rapid diminution in the amount of pus discharged and the coincident appearance of healthy granulation tissue never failed to impress us and it was usually possible to foretell by the general appearance of the patient after a few days treatment that the wound infection was subsiding

It cannot be denied that the same results might have been achieved by other methods It should however be recognised that most of these cases had previously been treated by other methods, both local and general, including vigorous systemic treatment with sulphonamides The failure of oral sulphonamides to influence the local infection was very obvious in many of our cases, though it should be noted that the infecting organism was commonly *Staph aureus* and that the sulphonamide used was either sulphanilamide or sulphapyridine, neither of which are very effective against this organism

The most impressive results in this series were, as would be expected, in purely surface infections In recent cases of this kind, treated with the warm sulphathiazole drip, the results were outstandingly good Where there is deeper sepsis it is obviously of great value to clear up the surface infection, so that surgical access is made safer We were only concerned with establishing the efficacy of local treatment, but there seems little doubt that, where the primary focus is deep as in chronic osteomyelitis, the treatment should embrace all the infected areas that can be made accessible by operation, provided that the treatment can be intensive and continuous It should not replace, but only be ancillary to, the purely surgical measures necessary to ensure adequate drainage or removal of necrotic tissues

Reviewing the results as a whole, it seems that local sulphonamide is the treatment of choice for a purely local infection, provided there is efficient access Certainly, at the present time, there is no reason to consider any other local antiseptic treatment until sulphathiazole has been given an adequate trial Undoubtedly still more effective compounds will be produced, and provided they are shown experimentally to have greater antibacterial powers, and to be no more harmful than sulphathiazole to the tissues, they will no doubt be used as they become generally available But in view of the excellent results we have obtained we recommend that, in the present emergency, sulphathiazole or sulphadiazine, which appears to have very similar properties, should be the sulphonamide generally adopted for the prophylaxis or treatment of local infection Penicillin and other powerful "biological" antiseptics like gramicidin may later displace the sulphonamides, but at present their place in local treatment appears to be where sulphonamide-resistant bacterial strains have developed in the wound

Although we have concentrated on the treatment of established infection the results have an obvious bearing on prophylaxis There is no space to consider it here, except to state that it is obviously just as important to use the most potent sulphonamide available in prophylaxis as in established infections, if unnecessary investigations are to be avoided

Finally it must be stressed that the treatment in no wise displaces accepted surgical measures and of course is of no value in sepsis below an unbroken surface A lack of understanding of the principles underlying the treatment is the main reason for the clinical arguments as to the relative merits of surgical and sulphonamide treatment Obviously they are complementary, though when intelligently used local sulphonamide treatment may often make further operative treatment unnecessary, or, as in many of our cases, enable it to be carried out safely, where it had previously been a hazardous procedure dictated by life and death considerations

SUMMARY

The mode of action of the sulphonamides is discussed in relation to their local use in the treatment of established infections

Fourteen grossly infected wounds, many of which had failed to respond to other treatments, including sulphonamides by mouth, were treated by the intensive local application of sulphathiazole

The clinical infection rapidly subsided under treatment in every case, though usually the causative organism was not eliminated

Preliminary trials with the local application of warm saturated sulphathiazole solution suggest that it may prove an efficient method of treating local sepsis

In routine clinical work at the present time, no other local antiseptic treatment of infected wounds should be attempted before the sulphonamides, preferably sulphathiazole, have been given an adequate trial

The expenses of this work were defrayed by the Medical Research Council and one of us (T P) is in receipt of a whole time personal grant from this source

We are indebted to Mr Holdsworth who permitted us to treat his cases, and to Professor Wayne, both members of the team investigating the treatment of shock and war wounds in Sheffield, and to Dr Hermitte for his assistance in bacteriological and photographic work

Messrs May and Baker gave us the sulphathiazole used in the early part and Messrs Ciba that used in the latter part of the investigations, and to both our thanks are due

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PHOLEDRINE IN THE PREVENTION OF OPERATIVE SHOCK

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IN many surgical operations shock of varying degree occurs, in most cases it is mild and of short duration, disappearing spontaneously as soon as the operative manipulations or the anæsthetic are completed In more severe cases, shock can be controlled with the routine anti-shock measures combined with speed in the completion of the operation There remain some cases, however, where the patient is old or anæmic, or when long extensive operation is needed, in which severe shock becomes probable rather than possible, and its control a matter of much greater anxiety It is in regard to this latter type of case that we should like to record our clinical experience with the drug pholedrine,* which though reported on favourably by Dodd and Merton (1939) and Dodd (1940, 1942) appears to have escaped the wider recognition it deserves

We have used it prophylactically to prevent the onset of shock (its use has been disappointing in fully developed shock), and in "bad risk" patients, in whom severe shock is likely to develop despite adequate treatment (blood-transfusion, plasma, &c) It is imperative to estimate the blood-pressure repeatedly A falling blood pressure is the most constant concomitant of developing shock, we have aimed at preventing it by keeping the blood-pressure within 10%–15% of the normal preoperative level, and it is only by observation of the blood-pressure every 10–15 min that this control can be exercised

The drug can be given subcutaneously, intramuscularly or—if rapid action is desired—intravenously, and in our experience it may be repeated many times without any weakening or suppression of its biological action Experimental evidence on this point is conflicting, however (Rietschel 1939, Roberts and Ginader 1938) We found no harmful action on the heart, but reports on its cardiac effect are rather variable Some workers

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* The pholedrine used in this investigation was 'Stimatone' (Ward, Blenkinsop & Co)

(Klostermeyer and Jonsson 1937, Parade 1938, Schoenwold et al 1940, Reis 1940) have demonstrated abnormalities of the electrocardiographic rhythm and complexes, while others maintain that it improves the coronary circulation and stroke output of the heart Many of these experiments were conducted on animals, and in one case at least the anæsthetics used were chloroform and cyclopropane—the latter being especially noted for producing arrhythmias

Pholedrine seems to have a longer and more positive action than adrenaline, ephedrine and other vasopressors, and although it might be anticipated that a patient whose blood-pressure had been continuously stimulated during an operation would tend to collapse when the stimulant was removed such has not been our experience, blood-pressure readings, continued postoperatively for many hours, have been remarkably constant. We have used pholedrine with both inhalation and spinal anæsthetics With spinal anæsthesia our method of administration is as follows Pholedrine 0 5 c cm is given 10 min before the spinal injection, should there be a significant drop in blood-pressure a further 0 5 c cm is given subcutaneously, and the blood-pressure is brought back to within normal limits If the fall has been more profound the blood-pressure can be more readily restored by giving 0 25 c cm of pholedrine intravenously followed by 0 5–0 75 c cm subcutaneously

In our earlier cases we tended to give doses which were too large and the blood-pressure would rise dramatically to 20–30 mm Hg above the preoperative level, confirming the observation of Dodd (1942)

CASE-RECORDS

The following 10 cases illustrate the value of pholedrine In all of them, despite the fact that they were extremely severe operations on patients who were poor operative risks, we were impressed by the control we had over the blood-pressure and the ease with which it could be made to return to normal, even after long operations

1 —A man of 33 with gastric carcinoma He was thin with visible peristalsis and a palpable mass Condition fair Preoperative blood pressure, 115/85 mm Hg Anæsthetic spinal 'Percaine,' 1/1500, 12 c cm, 'Pentothal,' 0 6 g, nitrous oxide and oxygen Resuscitation blood transfusion during operation, 540 c cm Total pholedrine used 2 25 c cm (1 5 c cm intramuscularly, 0 75 c cm intravenously) Operation partial gastrectomy The operation took 150 min, but the blood pressure was maintained and at the conclusion was 115/90 mm Hg When pholedrine 0 25 c cm was given 90 min after the beginning of the anæsthetic the blood-pressure was raised to 150 mm Hg systolic (fig 1) Uninterrupted recovery, after 5 months was very well

2 —A man of 34 Admitted for acute obstruction by bands Operation under spinal anæsthesia (percaine), 18 in of gut found to be obstructed but viable, and after division of band the abdomen was closed Three days later onset of pain and palpable mass in left iliac fossa Rising pulse rate, vomiting, general condition poor Blood-pressure 110/80 mm Hg Anæsthetic pentothal (0 25 g) induction followed by cyclopropane Resuscitation intravenous saline Pholedrine continued after return to ward Oxygen by BLB mask on return to ward At operation 18 in of gut was found to be gangrenous owing to a mesenteric thrombosis, this was resected and anastomosis attempted between two ends of ileum As the distal part had been injured and had to be invaginated it was decided to perform an anastomosis between the proximal ileum and transverse colon The operation took 90 min Blood pressure was maintained throughout by two injections of pholedrine 0 5 c cm On return to ward there was some fall of blood pressure corrected by two further injections of pholedrine, 0 5 c cm subcutaneously Condition after 48 hr satisfactory Patient died later from peritonitis (fig 2)

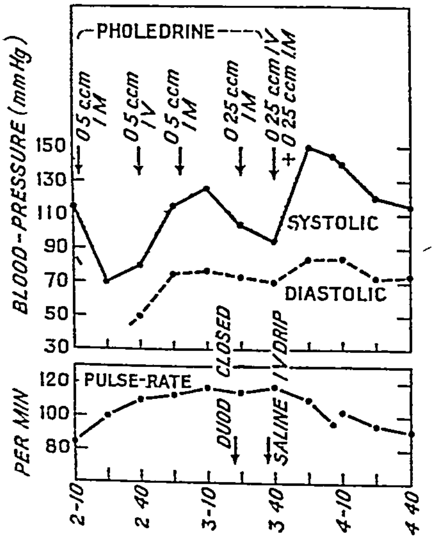

Fig 1—Aged 55 partial gastrectomy for carcinoma. Anæsthetic percaine 1/1500 12 c.cm pentothal 12 c.cm with nitrous oxide and oxygen

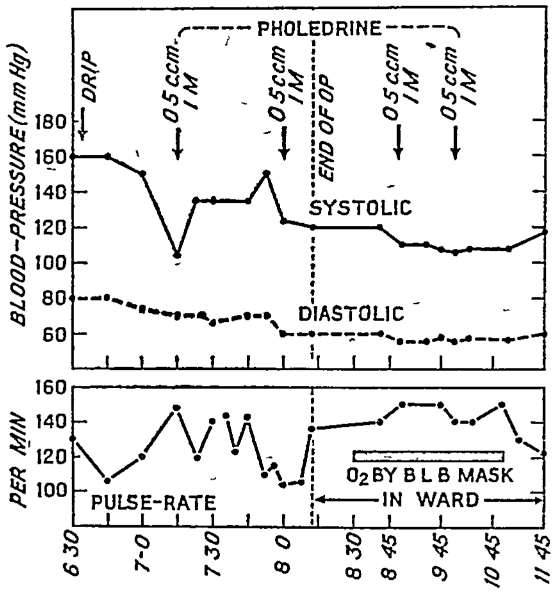

Fig 2—Aged 34, resection of small gut for mesenteric thrombosis Anæsthetic pentothal 0 25 g and cyclopropane

3 —A woman of 47 Thyroidectomy a month before for severe thyrotoxicosis when the electrocardiogram showed some slurring of the QRS complex Condition had much improved but was still retarded by an enormous ovarian cyst which was embarrassing respiration Anæsthetic bromethol, nitrous oxide, oxygen and ether Resuscitation intravenous saline, pholedrine Operation ovariectomy Blood-pressure at start 140/100 mm Hg After 60 min blood pressure fell to an unrecordable level Pholedrine 0 5 c cm restored the blood pressure to normal, and after a further slight fall it was maintained by a further injection of 0 5 c cm intramuscularly Uninterrupted recovery

4 —A woman of 72 History of coronary thrombosis 3 months before, preoperative electrocardiogram showed sinus tachycardia, T 3 inverted, left axis preponderance Blood-pressure 160/80 mm Hg Chest basal crepitations Hæmoglobin 86% Anæsthetic spinal percaine, 1/1500, 10 c cm, pentothal 0 25 g, gas and oxygen Resuscitation pholedrine Operation vaginal hysterectomy After administration of anæsthetic blood pressure fell to 100/15 mm Hg despite pholedrine 0 5 c cm. given intramuscularly 15 min before Further doses of 0 25 c cm intravenously and 0 25 c cm intramuscularly soon restored blood-pressure to 130/70 mm Hg A later injection of pholedrine 0 33 c cm intramuscularly restored blood pressure to normal Duration of operation, 80 min Postoperative electrocardiogram showed no change Uninterrupted recovery

5 —A man of 49 Condition poor, anæmic, Hb 38% Palpable mass in abdomen Previous gastro-enterostomy; diagnosed as doubtfully operable carcinoma of the stomach Given blood-transfusion preoperatively and Hb brought up to 65% Anæsthetic spinal percaine, 1/1500, 13 c cm, pentothal and cyclopropane Operation partial gastrectomy Duration 180 min Blood pressure maintained by small injections of pholedrine and patient was returned to ward in fairly good condition Uninterrupted recovery

6 —A man of 57 Thrombocytopenic purpura Developed profuse and widespread hæmorrhages and had to be given, in all, 4 l of blood and 420 c cm of concentrated red cells before bleeding ceased and progress was made Three months later Hb 70% Splenectomy Duration 80 min Anæs-

thetic spinal percaine, 1/1500, 12 c cm pentothal (continuous) 0 5 g Resuscitation pholedrine 0 25 c cm intravenously, 1 25 c cm intramuscularly Blood pressure 110/80 mm Hg at start of operation, fell after ½ hr to 85/40 mm Hg Pholedrine 0 25 c cm intravenously and then repeated doses of 0 25 c cm intravenously and 0 75 c cm intramuscularly, with restoration and maintenance of blood pressure which at conclusion of operation was back to normal Uninterrupted recovery

7 —A man of 63 Developed suppurative cholecystitis while recovering from amputation of leg through thigh for thrombophlebitis obliterans Previous lumbar sympathectomy for same condition Blood pressure 150/80 mm Hg Fat, poor myocardium Râles at both bases Anæsthetic spinal percaine, 1/1500, 13 c cm , cyclopropane and oxygen Resuscitation pholedrine Operation cholecystotomy Duration 45 min At start there was a sudden fall of blood-pressure which was quickly restored by pholedrine 0 5 c cm intravenously and was maintained by 2 5 c cm intramuscularly in divided doses After 30 min operating a further fall to 100/65 mm Hg was restored to normal by 0 5 c cm intravenously Uninterrupted recovery

8 —A woman of 52, air-raid casualty Multiple injuries, including one perforating peritoneum On admission, blood pressure 115/78 mm Hg, pulse-rate 70 Given 400 c cm of plasma, 2½ hr later blood pressure 140/78 mm Hg, pulse rate 72 Taken to theatre wounds, including abdominal wound, explored and treated Duration 135 min Anæsthetic pentothal, 1 5 g (continuous), nitrous oxide and oxygen Resuscitation in theatre further 200 c cm serum intravenously, pholedrine Blood pressure at conclusion of operation 155/80 mm Hg Uninterrupted recovery

9 —A woman of 51 Symptoms of obstruction and irreducible femoral hernia for 12 hr Pale, dehydrated, vomiting Operation femoral sac incised but as obstruction was released bloodstained fluid flowed from general abdominal cavity Laparotomy showed strangulated dead gut over large caseous gland Resection of gut Duration 195 min Anæsthetic spinal percaine, 1/200, 2 c cm , cyclopropane Resuscitation saline, pholedrine Uninterrupted recovery

10 —A man of 59 Perforated duodenal ulcer for third time Condition fair but dehydrated Operation suture of perforation and gastro enterostomy Duration 120 min Condition maintained throughout Anæsthetic hexobarbitone 0 5 g , cyclopropane and oxygen Resuscitation intravenous saline, pholedrine Uninterrupted recovery

DISCUSSION

We have used pholedrine in cases in which owing to the state of the patient or the extent of the operation shock has been likely to develop We have hoped to avoid irreversible or profound shock by keeping the blood-pressure as constant as possible and restoring it to normal as soon as possible For this we have found pholedrine of great value Once " irreversible " shock has developed pholedrine is of no value We have not encountered this in our operation cases, but have seen it in severely shocked air-raid casualties and have found little or no response to pholedrine, unfortunately the records of these cases were either lost or not kept owing to the blitz Pholedrine does not replace adequate preparation of the patient preoperatively by blood-transfusion, saline infusion or other necessary measures Similarly, if pholedrine is to have its full effect during operation the blood-volume must be maintained by transfusions of blood or plasma, or by intravenous infusions Under these conditions we have not found it necessary to use any other cardiac or respiratory stimulant

We wish to thank our colleagues at St George's Hospital for their cooperation during this investigation

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THREE CASES OF LOCKED TWINS

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THE locking of twins is rare, though the number of cases published in the past few years seem to indicate that it is getting less so This might be expected if it is true that ordinary twin pregnancy is becoming more common The only statistics which I have been able to discover are those of Von Braun (quoted by Eden and Holland 1937), who from Viennese figures estimated that it occurred once in 90,000 labours This gives a rate of 1 in every 1000 twin labours Many obstetricians of wide experience have never encountered the condition, and I must account myself fortunate in having treated three cases in the past six years

There are five ways in which locking or collision may happen The fœtuses are usually small or the pelvis very large

1 The fœtuses both presenting by the vertex, their heads enter the pelvis side by side and become arrested If, however, the heads are very small, spontaneous delivery may ensue The treatment is to push up the heads above the pelvic brim, if possible, and deliver the babies separately, as a rule by forceps extraction Firm impaction may necessitate craniotomy of one or both heads before delivery can be effected

A case of this type was reported by Commandeur and Eparvier (1923) They were able to reproduce the condition found, since the fœtuses though stillborn were not mutilated, and they published a photograph showing the manner in which the head of the second twin fitted the neck and shoulder of the first Phillips (1926) reported a similar case, where the impaction of the head was such that disengagement was impossible He perforated the cranium of the first fœtus, severed the neck and removed the head before he was able to push up the trunk and deliver the second child Both fœtuses were macerated The mother made a good recovery Dawson (1936) also reported such a case and since the diagnosis was made before the os was fully dilated and both babies were alive he performed a lower segment cæsarean section, saving both children The puerperium was uneventful

2 The first child presents by the breech, the second by the vertex the heads either become impacted in a manner similar to that of the previous type or become locked by the chins Rarely, spontaneous delivery may take place

McClintock (1876) cited two cases in which nature succeeded in overcoming the obstacle In rare instances, the chins may be disengaged by internal manipulation and delivery completed Moore (1933) was able to do this by a process of rotation and traction, and delivered the second child alive Here, the delay arose when the feet of the first child presented at the vulva in a footling presentation—i e , the fœtus was still high in the pelvis—and this probably accounted for the ease with which delivery was effected More often the heads are firmly fixed in the pelvic brim or cavity and cannot be disimpacted There are then two courses open Since the first child is known to be dead, it may be decapitated, the trunk removed and the head pushed up, when the second fœtus can be delivered by forceps and the first head ultimately removed Or the head of the first child may be perforated through the mouth and extracted, this method being suitable only in cases in which collision and not locking has occurred McClintock (1876) mentions one case in which decapitation was performed " with a bass string wrapped round with wire of a pianoforte " I learn that, adopting a similar principle, even the unmusical may perform decapitation with a wire such as is used in a Gigli saw passed around the neck by means of a Blond-Heidler needle Severance of the neck with embryotomy scissors can be a tiring and difficult process, as I discovered, with the hand confined within a fully occupied pelvic cavity The decapitation hook is not designed for, and is valueless in, this type of case

3 The breech of the second child, with the legs flexed, enters the brim at the same time as the thorax of the first child, also presenting by the breech, preventing further progress of the first child, whose head remains abo[illegible] brim

This happened in the third of my cases, but I have not seen it described previously. I would have expected this type of locking to be relatively common, and no doubt such cases have been recorded which I have overlooked in my necessarily limited survey of published work. Further progress in such a case, if it could take place, might result in a double footling presentation as described below (type 5). Spontaneous delivery would be very unlikely, although treatment proved relatively simple.

4. The first child presenting by the breech or the feet may become locked by the chin on the body of the second child, lying transversely. Natural delivery is impossible. Decapitation of the first twin should be performed, and an effort made to save the second by version and extraction.

Ackermann (1920) reported a case in which the lower fœtus presented transversely by the shoulder, while the head of the second was lying in the pelvis, the arm of the transverse twin preventing descent of the second head. By pushing up the arm above the brim he was able to extract the second child with forceps; afterwards an internal version was performed on the first, around which the cord was looped in a complicated fashion. Both children survived.

5. Both fœtuses presenting as footlings may enter the pelvis together.

Again McClintock (1876) is my source of information, and I can do no better than quote his own words:

“ Of the other variety of bifœtal presentation Amand relates a case where he found three feet presenting. By careful examination he ascertained the two belonging to the same fœtus and brought them down. Dr. F. H. Ramsbotham was once called to a case where a leg of each child was beyond the vulva. ‘Although they were right and left,’ he remarks, ‘I immediately detected by the direction of the toes that they belonged to different bodies; by gently pushing up one, and careful traction at the other leg, I extracted each breech from the brim of the pelvis and both children were born living.’ ”

Few cases of this type can end as happily as this last—embryotomy is usually the fate of both children. Smellie himself, with his vast experience, makes no reference to this complication of twin labour, and it must therefore be assumed that he never saw such a case.

CASE 1

A primigravida, aged 21, was admitted to hospital on Feb. 19, 1936, in the 38th week of pregnancy according to her dates. Though dirty and self neglected, she appeared healthy; she was a heavily built, unintelligent girl who had had no ante-natal care. Apart from a moderate rise in blood pressure she had no toxæmic manifestations. External measurements were large and the uterus was the size of a full time pregnancy. A presenting part was in the pelvis, but the fœtal parts were indefinite and difficult to determine owing to tenseness of the uterus. At this time only one fœtal heart was made out, to the left of the umbilicus. On vaginal examination, the soft parts were normal. The pelvis was very large; the promontory was not reached and the outlet was normal. The presenting part was difficult to determine because she resisted examination, but was thought to be a small breech. An X ray revealed twin pregnancy, the first fœtus presenting by the breech with legs flexed and back to the left, the second—a smaller fœtus—presenting by the vertex with back to the right.

Labour came on at 1 A.M. on Feb. 20. At this time (the X ray having no doubt assisted localisation) two fœtal hearts were audible: one to the left and just below the umbilicus, the other to the right above the navel. Labour proceeded normally until 8.50 A.M., when the membranes of the first fœtus presenting at the vulva, were ruptured artificially and a foot presented; 30 min. later the buttocks were born, the sacrum to the left and anterior. Labour continued naturally until the umbilicus was born, when the cord was found to have stopped pulsating. The arms, which were flexed, were hooked out of the vagina, and traction applied to the legs, without causing any advance of the fœtus. At 9.45 A.M., with the patient anæsthetised, I passed a hand into the vagina, which was unusually capacious, and into the uterus posteriorly. I found that the chin of the first fœtus, pointing to the right, had become locked with that of the second, lying towards the left. The two heads were firmly wedged in the lower uterine segment, and could be felt lying together on abdominal palpation. The second fœtal heart was still audible. The neck of the first twin felt elongated, no doubt as a result of efforts at extraction. I was unable to push up the head of the first fœtus, or otherwise disimpact the chins, and therefore decided to decapitate the first fœtus in an endeavour to save the second. The cord was severed between forceps. Since the vagina, though roomy, was uncomfortably tight for the hand in its upper part, the first fœtus was rapidly eviscerated through the abdomen, the thoracic contents being drawn out through the diaphragm. I then passed my left hand along the back of the fœtus, between it and the anterior vaginal wall, and my index and middle fingers over the shoulders, as in shoulder traction. A stout pair of curved scissors, similar to those used for morcellement, was then passed upwards between the hand and fœtal back, and, with my fingers protecting the maternal tissues from the blades, I severed the neck in the lower cervical region. The trunk being thus removed, the head was readily pushed up past the second fœtus after a long vulsellum had been attached to the cut tissues of the neck. The head of the second fœtus was then brought manually into the pelvic cavity, light forceps applied, and the child delivered in the left occipito anterior position, complete in its membranes. The sac was very lax and contained almost no liquor, so that I had previously thought them to be ruptured. The child was very small and in a profound state of shock; it did not survive its birth, for respiration was never established. A second vulsellum was attached to the neck of the first head, which was then easily delivered by traction. The placenta, of the fused binovular variety, was delivered 8 min. later. The uterus contracted well without abnormal loss. There were no soft tissue lacerations.

The operation occupied 1 hr. 10 min. The patient's condition after these tedious manipulations was excellent, her blood-pressure being maintained at 136/80 mm. Hg. Both fœtuses were female. The first, without the viscera, weighed 4 lb. 10 oz., and the second 2 lb. 13 oz. No other measurements were recorded. The puerperium was normal in every way. The patient left hospital on the 12th day after delivery, at which time involution was proceeding normally, although the uterus was still somewhat bulky. She did not return for postnatal examination.

CASE 2

A recently widowed primigravida, aged 34, auburn haired, highly strung and of good physique, first attended my ante natal clinic on March 2, 1937, when 25 weeks pregnant. I found no physical abnormality, and the blood pressure and urine were normal; but the uterus was the size of a 28 weeks pregnancy. She attended the clinic until April 12, when she began to complain of headaches, vomiting, and swelling of the legs. I admitted her, since her blood pressure was 150/80 mm. Hg, and she had gross œdema of the legs and feet, though the urine was normal. By her dates she was 30 weeks pregnant, but the uterus was the size of a 34 weeks gestation. It was tense, and the fœtal parts indefinite. What I took to be a head was above the brim, but to the left of the umbilicus was another ballottable part which felt like a second head. A fœtal heart was heard to the right of the umbilicus, and another at the fundus, though there was little difference in the rates. X rays confirmed the presence of twins. One fœtus lay in the right oblique position with its head just above the brim; the other at a much higher level, with its head to the left of the umbilicus and the breech at the right fundus, the back occupying the fundus to the left.

The patient improved rapidly and was able to leave hospital 6 days later, but in a week was readmitted with similar toxæmic symptoms. The blood pressure was now 180/100 mm. Hg and there was albumin in the urine. Despite drastic treatment she improved only up to a point; the albumin never quite disappeared from the urine, and the blood pressure was never below 130/80 mm. Hg. Urine sterile; no casts. Blood urea normal.

On May 21, 26 days after admission, I decided to induce labour. The uterus was the size of a full-time pregnancy, and the pelvis roomy. I found a breech entering the pelvis, head at left fundus, back to the left; the other child was a vertex with head in the right iliac fossa and back to the right. Both fœtal hearts were normal. There had thus been a considerable readjustment of the fœtal positions since the X ray had been taken. Three doses of quinine sulphate, gr. 5, were given at 2 hourly intervals, the last dose at 12 noon. Labour started with vague pains at 12.30 P.M., becomin stronger by 1 P M when I saw the patient and was satisfied with her condition For the next 12 hours I was absent from hospital, and this part of the story was reported to me by the nursing staff and by a colleague who was called in At 1 30 P M the patient vomited, but seemed to be progressing normally She was transferred to the labour ward at 3 P.M , blood pressure 210/130 mm Hg Shortly afterwards she collapsed , she was pale and cold, with pulse rate 56 per min Both fœtal hearts were slow The labour pains almost disappeared At 7 P M the patient's general condition was the same The fœtal hearts could no longer be heard Pains weak and irregular On rectal examination the breech was in the upper pelvic strait, and the os 2–3 fingers dilated The membranes ruptured shortly afterwards, and at midnight a foot appeared at the vulva At 12 30 A M on May 22 I saw her again She was in a desperate condition and looked profoundly shocked She was pale, with a cold, moist skin and clammy extremities despite numerous hot bottles Pulse thready, 154 , blood-pressure 194/148 mm Hg I concluded she was suffering from some unusual toxæmic manifestation, but have since thought this must have been a case of quinine idiosyncrasy, as a colleague suggested at the time Treating her for toxæmia, I removed 15 oz of blood by venesection and replaced it by 150 c cm of 50% glucose saline solution and 10 c cm of 10% calcium lævulinate , after this I gave morphia, gr $\frac{1}{6}$ She appeared a little better , her pulse rate fell to 136, and her blood pressure to 160/110 mm Hg At 3 A M she vomited 10 oz bloodstained fluid Morphia, gr $\frac{1}{6}$ was repeated, and she slept for short periods At 5 30 A M she again vomited bloody fluid Blood pressure had fallen to 144/124 mm Hg Occasional pains, with slow advance of the fœtus , general condition stationary At 8 A M the breech was born to the umbilicus An hour later her general condition was deteriorating , her blood-pressure was only 110/90 mm Hg and pulse rate 144 Morphia, gr $\frac{1}{4}$, and a subcutaneous saline were given An hour later there was no improvement, and I gave her 30 oz of gum saline with 10% glucose, with improvement which was maintained Labour pains had disappeared At noon the pains recurred and were now much stronger The body was born as far as the costal margins, but then progress became arrested despite increasingly strong pains On abdominal examination I found that the heads had become locked together above the brim, the head of the second fœtus lying lower than that of the first whose body was already partly born By abdominal manipulation I could not disengage the second head from above the pelvic brim into the right iliac fossa, and therefore decided, with some misgivings on account of her poor condition, to examine her under anæsthesia

Under gas, oxygen and ether I passed my hand into the vagina posteriorly after bringing down the flexed arms, and upwards into the lower uterine segment I found the head of the second fœtus lying transversely and extended with its face towards and wedged in between the shoulder and head of the first child The neck of the first child and the occipito frontal diameter of the second child occupied the transverse diameter of the brim By pushing up the body of the first fœtus with my outside hand I was able to rotate the second head to bring the occiput to the front, which had the desired effect of disengaging the face from the root of the neck of the first child After pushing the second head into the uterine cavity to the right, I readily extracted the head of the first child The second bag of membranes was then ruptured artificially, releasing only a small amount of liquor, and the fœtus extracted with forceps The placenta, of the fused binovular variety, was expressed 20 min later Ergometrine and 'Pitocin' (PDCo) were given and the loss was very slight

Both infants were born dead The first was a male, weighing 4 lb 1½ oz , length 18 in , the second a female, weighing 4 lb 11 oz , length 19¾ in

The patient's condition at the close of the operation—which only lasted 15 min —was rather poor , blood-pressure 134/76 mm Hg, pulse rate 120 Continuous proctocylsis with 5% glucose solution in saline was instituted The same evening I observed ecchymoses of the skin of the abdominal wall, at the sites of injection of the various drugs, and on the arm where the tourniquet had been applied before the intravenous injections Since the onset of the acute illness, 24 hours before, the urine had contained much blood Lederle's viper venom, 0 4 c cm , was given intramuscularly and repeated later , there was no subsequent hæmorrhage The patient, though she appeared to have cystitis, improved rapidly until the 9th day of the puerperium, when her lochia became offensive and gradually more profuse, though her general condition was good and there was no pyrexia She was examined vaginally a day or so later, and a vesicovaginal fistula about ¼ in in diameter, surrounded by necrotic tissue, was found about 1½ in within the introitus I could not account for its appearance in an area subjected to no trauma whatever during labour The urine became normal with the administration of acid sodium phosphate, gr 30 t d s , and I closed the fistula under spinal anæsthesia about four weeks after it was discovered When seen a month later she was in good health and was passing urine normally The fistula was completely healed, and both urine and blood pressure were normal

CASE 3

A primigravida, aged 24, was admitted in labour on Feb 4, 1941. She was at term according to her dates, and said she had attended an antenatal clinic during the latter months of pregnancy She had booked a midwife and was to have had her baby at home Her last attendance at the clinic was 3 days before the onset of labour Labour began with pains of a minor character at 1 A M on Feb 1, but she did not call in her nurse until 6 P M two days later The midwife examined her vaginally , there was no dilatation and the presenting part was high A mild sedative was given At 1 15 A M on Feb 4 the os was fully dilated, and the midwife thought she felt " a hand in front of a vertex " She therefore called in a doctor, who examined the patient at 4 15 A M , finding a foot presenting He also diagnosed twin pregnancy, and sent the patient into hospital

On admission, at 5 40 A M , she was distressed The pulse rate was 130, the tongue furred and the mouth dry There was considerable œdema of the legs and the face was puffy Pains were strong and almost continuous A foot was protruding from the vulva, but it did not descend with the pains The uterus reached to within 2 in of the ensiform cartilage One head was palpable above the pubes in the midline, the other at the fundus to the left Only one fœtal heart was audible, to the left of the umbilicus I thought some kind of locking might have occurred At 6 20 A M she was given 0 8 c cm of 'Heavy Percaine' intrathecally A foot was protruding from the vulva, the legs and body of the first child occupied most of the pelvic cavity, with the back facing backwards , the cord was pulsating The os was fully dilated The pelvic brim was occupied anteriorly by the neck of the first child, while behind it the flexed legs and buttocks of the second child had descended just below the level of the brim, the legs being in front, occupying the nape of the neck of the first fœtus, and thus preventing the descent of the first head into the pelvic cavity The membranes of the second fœtal sac were unruptured, but the amount of liquor was very small The lower pole of the second fœtus was easily pushed up above the brim, so disengaging the legs from the nape of the first child By traction on the presenting leg the head of the first baby was then brought into the pelvis and a living child delivered with moderate ease at 7 A M At 7 10 A M 5 units of pitocin were given, and the membranes of the second fœtus were ruptured artificially with escape of a small quantity of liquor The breech engaged at once, and a living child was spontaneously delivered half an hour later The placenta separated almost at once, and could be seen protruding from the vagina It was therefore expressed, complete with membranes, five minutes later Loss was scanty but ergometrine, 0 5 mg , was given intramuscularly The placenta was of the uniovular variety, with separate amniotic sacs

Both children were males and apparently healthy The first weighed 3 lb 15 oz , the second 4 lb 5 oz The first died on the 4th day, after a convulsion , permission for autopsy was not obtained The second child was reared satisfactorily The puerperium was uneventful

DISCUSSION

The causes of twin locking can only be conjectured, but there are some conditions which undoubtedly predispose to it Except in the very unusual type in which a limb of one fœtus enters the pelvic cavity and blocks the descent of the other, the pelvis must be large and the presenting parts small A normal amount of liquor in each fœtal sac will probably prevent locking, and I believe we can go further and say that a deficiency of liquor in the second fœtal sac favours the accident Dawson (1936) suggested that this might be so, having observed oligohydramnios in his case , Phillips (1926) made the same observation, and there was oligohydram nios of the second fœtal sac in all of my cases. Unfortunately the amount of liquor in the second fœtal sac is not specifically mentioned in most of the case-reports I have studied. Premature rupture of the second membranes might, I presume, predispose to locking.

It might be expected that mono-amniotic twin pregnancy would conduce to locking or collision of the fœtuses. Quigley (1935) denies that locking is commoner in such cases, but the total number of mono-amniotic twin pregnancies so far reported is little over 100. When one studies the disposal of the fœtus in cases of multiple pregnancy—the dovetailing together, as it were, of the babies in order to economise space—it seems remarkable that locking does not take place more often.

SUMMARY

Five common types of twin locking are described, and 3 cases reported in detail.

Predisposing factors are a large pelvis and relatively small fœtal parts, and oligohydramnios of the second fœtal sac may be important.

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PANCREATITIS AND DIABETES

RODNEY SMITH, M S LOND, F R C S
LATELY SURGICAL REGISTRAR AT THE MIDDLESEX HOSPITAL

THE normal function of any organ is liable to be affected adversely by gross destructive lesions. It is curious, therefore, that while there is little argument about the importance of the pancreas in the pathology of diabetes mellitus, most surgical textbooks, in discussing acute pancreatitis, pay little attention to diabetes as a possible complication. It is true that the part played by the pancreas is even now not fully understood, but there is no doubt that secretion of insulin is a property of the islets of Langerhans; since these are scattered throughout the pancreas, it seems reasonable to assume that if a large part of the pancreas is completely disorganised by disease the destruction of islet tissue should result in a diminution in the secretion of insulin. A recent case in which acute pancreatitis was associated with postoperative diabetic coma, with fatal results, prompted a study of the published cases to ascertain whether diabetes is an excessively rare complication of pancreatitis, or whether the possibility should be considered in every case and steps taken accordingly.

CASE-REPORT

A woman of 53 was admitted to the Middlesex Hospital with the following history, the salient points of which had to be obtained from relatives, owing to her poor condition. Until a week before she had been well. There were no significant illnesses in her history, except possibly one attack of jaundice 20 years ago, lasting "a week or so," and nothing to suggest previous diabetes mellitus. A week before admission she had been seized with severe abdominal pain mainly epigastric but felt to a lesser degree over the whole abdomen. She stayed in bed, feeling very ill and in great pain, and unable to take anything but fluids by mouth; a doctor was not consulted until 5 days later, the pain now being worse and accompanied by abdominal distension and vomiting. She was admitted to hospital 2 days later with a diagnosis of peritonitis of unknown origin. Just before admission she had been given an injection of morphia, gr ½.

She was very drowsy, with pin point pupils, but able to coöperate to a certain extent. Abdominal pain was still severe. There was no backache. Temperature was 103·4° F and pulse rate 116 per min. She appeared very ill and dehydration was well marked. There was profuse, effortless vomiting of dark brown intestinal contents. The abdomen was grossly distended, with hyper resonance, a little free fluid in the flanks and no diminution of liver dullness. There was generalised tenderness, most obvious in the upper half of the abdomen. On auscultation, peristaltic sounds were completely absent. Examination of the urine, removed by catheterisation, revealed no abnormality. The odour of the breath was such that had acetone been present it is doubtful if it would have been detected.

The patient was so obviously in extremis that it was impossible to make a certain diagnosis, but in view of the unmistakable ileus and the fact that the pain was mainly in the upper abdomen, the most likely diagnosis was thought to be diffuse peritonitis, probably caused by perforation of a peptic ulcer or the gall-bladder. Intravenous drip saline was started. The stomach was emptied of its foul intestinal contents by aspiration with a large stomach-tube, after which continuous suction-drainage was instituted with a Ryle's tube and a modified Wangensteen apparatus. The abdomen was opened by a midline epigastric incision, under local 'Percaine' field block and light cyclopropane and oxygen anæsthesia. A little free peritoneal fluid found, but no peritonitis, though both large and small gut were greatly dilated. There was no fat necrosis. The cause of the ileus was not long sought, for on palpating the region of the pancreas, a mass about the size of a tennis ball was felt, apparently occupying the whole of this organ. When the mass was approached through the gastrocolic omentum, it was found to be tensely cystic, and a finger was easily inserted into a large abscess cavity from which was evacuated a considerable quantity of foul, stinking pus and several sequestra of necrotic pancreatic tissue. Culture gave a pure growth of *Bacterium coli*. The abscess was drained with a piece of corrugated rubber and 15 g. of powdered sulphanilamide was implanted locally. The patient did not regain consciousness from the anæsthetic, but passed straight into diabetic coma; 15 hours after operation acetone could be detected in the breath, and the blood sugar was 420 mg. per 100 c.cm., blood urea 110 mg. per 100 c.cm. Measures to combat this unexpected catastrophe were at once instituted, but though temporary improvement at one point gave grounds for hope, and the blood sugar was brought down to 111 mg. per 100 c.cm., she died 3 days after operation. Autopsy revealed that almost the entire pancreas had been destroyed; in addition she had portal pyæmia with multiple abscesses in the liver, and bilateral bronchopneumonia.

DISCUSSION

Though so little attention has been paid to diabetes as a complication of acute pancreatis, published cases show that disturbances of carbohydrate metabolism are common in cases of pancreatitis. In 1862 Harley described a case in which there was glycosuria, and Atkinson described a similar case in 1895. Fitz (1889), in his original papers on acute pancreatitis, does not mention diabetes as a complication. Korte (1911) reported 44 cases of acute pancreatitis, in 6 of which there was glycosuria. The evidence suggests that while glycosuria with acute pancreatitis is by no means rare, it is present in only a relatively small percentage of cases. Shumacker (1940) places this figure at 11%. If glycosuria is not common, most workers agree that hyperglycæmia is. Douglas (1933) placed little reliance on estimation of the blood-sugar as an aid to diagnosis, but Cole (1938) believes it can help; Brocq and Varangot (1937) collected 72 cases in which the blood-sugar had been estimated and found that in 15 of these it was below 150 mg. per 100 c.cm., in 23 it was between 150 and 200 mg., and in 34 over 200 mg.

In most of these cases of glycosuria and hyperglycæmia the disturbance of carbohydrate metabolism was only temporary. There are, however, a number of reported cases in which true diabetes was caused by acute pancreatitis. Schmieden and Sebening (1937) analysed 1278 cases of acute pancreatitis, of which 624 survived and 18 developed diabetes. Shumacker (1940), in his exhaustive survey, collected 62 cases of diabetes caused by acute pancreatitis published up to that date; 25 developed diabetes during the acute illness, and of these 6 died in diabetic coma soon after operation, 13 died of some other cause during the acute illness, 6 survived the acute illness, but 2 of them died of diabetic coma later. 37 cases developed diabetes, 4 soon after recovery from the acute illness, and 33 more than a year afterwards. According to Shumacker, there are also about 19 cases on record of acute pancreatitis occurring in patients previously known to be diabetics, all fatal but one. A smaller number of cases have been reported of diabetes associated with cysts and pseudo-cysts of the pancreas (Donati 1932, Simsch 1932, Lebon and Loubeyre 1932, and others)

Disturbances of carbohydrate metabolism may also occur, though far less commonly, with chronic pancreatitis Cases of this kind associated with glycosuria have been described by Mallet-Guy and his colleagues (1936) and by Plauchu and Loras (1935) True diabetes is even less commonly associated with chronic pancreatitis, Mosenthal (1937) associates chronic pancreatitis with the slowly progressive essential diabetes of Naunyn, while Sweeney (1931) recorded a case in which chronic pancreatitis with obstruction of the common bile-duct and main pancreatic duct led to obstructive jaundice and diabetes, cholecystojejunostomy cured both the jaundice and the diabetes Less straightforward are the cases of Iberti (1940) and Ehrstrohm (1932), in both of which chronic pancreatitis led to functional hyperinsulinism

Some conclusions may be drawn about the incidence and importance of diabetes in inflammatory conditions of the pancreas In chronic pancreatitis true diabetes is rare It will be remembered that in cases of spontaneous hyperinsulinism not associated with an islet-cell tumour, surgical treatment to be successful involves the removal of about six-sevenths of the pancreas It seems probable that chronic pancreatitis will not cause diabetes unless a similar proportion of islet tissue has been destroyed or rendered inactive by inflammatory changes, which of course happens rarely The uncommon association of chronic pancreatitis with hyperinsulinism may possibly be explained by analogy with the known physiology of another gland having an internal and external secretion—the testis Ligation of the vas and obstruction of the external secretion causes an increase in the internal secretion, and in the pancreas it is possible that chronic pancreatitis, particularly if confined to the region of the head, may cause obstruction to the external secretion while destroying little or no islet tissue An increase in the internal secretion may result

In acute pancreatitis, extensive destruction of the pancreas is far commoner, and the number of cases associated with diabetes is correspondingly greater Even if true diabetes is not present, glycosuria occurs in about 11% of cases (Shumacker) and hyperglycæmia in a much higher percentage Acute pancreatitis in the previously diabetic is almost invariably fatal, only one case with recovery being recorded Should diabetes appear for the first time as a complication of acute pancreatitis, chances of recovery are small, in Shumacker's series only 6 surviving out of 25, and 2 of these dying soon after of diabetic coma It is probable that the formidable combination of a major abdominal catastrophe and diabetes is made even more lethal than need be by failure to consider diabetes as a possible complication, and consequent failure to recognise the condition and institute treatment at the earliest possible moment

It is clear that diabetes mellitus is, though uncommon, by no means a negligible complication of acute pancreatitis, and that minor temporary disturbances of carbohydrate metabolism, so far from being uncommon, are the rule Acute pancreatitis is itself not common, yet 4 cases were treated on one surgical firm at the Middlesex Hospital within two months Greater importance should be attached to estimations of blood-sugar as an aid to diagnosis in obscure cases in which pancreatitis is suspected, and in cases of proved acute pancreatitis routine blood-sugar estimations are advisable When one of these unusual cases does come under treatment, such measures might make it possible for early treatment to save a life that would otherwise be lost

I wish to thank Mr R Vaughan Hudson for his help and for permission to report this case, and Dr R W Scarff, of the Bland Sutton Institute of Pathology, and Prof E C Dodds, of the Courtauld Institute of Biochemistry, for permission to refer to pathological and biochemical data

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MASS RADIOGRAPHY

VOLUNTARY SCHEME IN A FACTORY

G B STANFORD, MRCS, ARPS

With supplementary notes on technical organisation by

K C CLARK, FSR

THE application of mass radiography to industry is in its infancy in this country The technical side is well explored and satisfactory records are obtainable, but the problem of the organisation of a scheme in a factory, although of equal importance, has not been much discussed In this paper will be presented a brief report on the results obtained from 600 people employed by a radio company, with special reference to the way in which the workers received the scheme

THE ROUTINE

At the start a memo describing tuberculosis, its effect on production and the justification for using mass radiography as a means of early diagnosis was given to the management Then, through the help of Sir Wilson Jameson, the prompt treatment of any early cases which might be detected was assured The people to be X rayed were drawn from the scattered factories of a large company in North East London, and they all had to travel to the X-ray apparatus The scheme was made possible by the kindness of Miss K C Clark of Messrs Ilford, who put the equipment and facilities of her department at my disposal for as many people as I cared to bring After a few teething troubles, the following organisation was adopted

Names were collected by the factory nurses and were placed on a waiting-list, Note A being sent to every applicant The X ray was taken every Thursday as soon after 5 30 as possible, so Notes B and C were sent out each Friday morning—that is, just one week ahead At 5 30 on the Thursday they assembled as directed and were escorted down by bus to the premises of Messrs Ilford at BMA House It should be noted that the workers came in their own spare time and at their own expense They were encouraged to bring, and in many cases did bring, their mothers, brothers, sisters, sweethearts and children, but the scheme did not include friends, the idea being that immediate family contacts should be incorporated

NOTE A —WELFARE DEPARTMENT

Your application for X ray has been received and I have placed your name on the waiting list

At present X rays are done every Thursday evening, and you will be given a week's notice of your appointment

FACTORY MEDICAL OFFICER

NOTE B —WELFARE DEPARTMENT

Arrangements have been made for you to be X rayed on Thursday Sister Smith will meet you in the entry hall at 5 30 in the afternoon to take you to Tavistock Square

Please bring this notice to the attention of your foreman or departmental head

If for any reason you are unable to be present on this day, please let me know immediately so that I may make arrangements for someone else to take your place and give you another appointment

FACTORY MEDICAL OFFICER

On arrival at the premises the workers filled in a card (Note D) which, besides providing the means of identification in the apparatus, was used as a record, the X ray report being written on the back later The men and women were then separated and the men taken to the X ray room, where they stripped to the waist and were quickly radiographed While this was being done the women undressed to the waist and put on pyjama jackets The men were then sent to dress in another room and the women brought into the X ray room

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This procedure worked quite smoothly, and 30 people, even under the relatively uncontrolled conditions, were done in the space of ¾ hour At the beginning height, weight and chest expansion were also taken, but this was found to slow up procedure too much and was discontinued With suitably designed changing accommodation and restriction to one sex per night, the rate of work could have been materially increased, but speed was not attempted

NOTE C—FACTORY MEDICAL OFFICER

I shall }
I shall not } be present on Thursday,
for my X-ray appointment
Signature

The miniature radiograms were interpreted by experienced radiologists, and I am indebted to Dr H Courtney-Gage and Dr K Poulsson for helping me in this way As soon as the results were known they were entered on the backs of the cards which the workers had filled in, and were sent back to me by post Form E was sent out in a sealed envelope immediately, so that usually each person knew the result within a week of the X ray being taken A large gap was left between the text and the signature so that special comments could be inserted—usually to the effect that there was evidence of some trouble having occurred at some time which was of no significance to the worker's present health

NOTE D

No allocated Date
Surname
Initials Age
(The above particulars in Block Letters)
Shop
Clock Number

Weight
Height
Expansion
mAs Time O

NOTE E—WELFARE DEPT

With reference to your X-ray taken on , I am pleased to be able to tell you that the Indirect Radiograph shows no evidence of any abnormality in your chest

FACTORY M O

Height in shoes, ft in
Weight, partially dressed, lbs

By this method a point was made of informing the worker of any abnormality however slight so that, if it were rediscovered later on, the miniature radiographic technique adopted could not be blamed for having missed it Any miniature radiogram suggesting abnormality was retaken on full-sized film before a diagnosis was attempted and, so that people should not think that their being recalled for this purpose necessarily meant that they had tuberculosis, I made a point of recalling at least two people from every weekly group

If the finding was considered to have any bearing on his present health the worker was invited to see me, an invitation which was in every case accepted I then explained the significance of the finding, and offered alternative courses to be adopted to deal with the problem, leaving it to his judgment to take the action he thought correct He usually then asked what I would do in such a position, and acted on the course suggested

A note of the X ray and the report was in every case attached to the patient's case-record card kept by my department

THE FINDINGS

Condition	Known	Unknown
Structural abnormality	1	6
Old chest trouble other than tuberculosis	1	9
Presumed old tuberculosis healed of no significance	0	8
Healed, requiring observation	6	6
Active tuberculosis	0	2

(" Known " here signifies that the condition was known to the worker before X ray examination)

One early case detected was confirmed by his tuberculosis officer and recommended for sanatorium treatment Our medical department visitor followed up the case and obtained his admittance within three days Another case detected was not confirmed by his tuberculosis officer and he is still at work under supervision

Twelve cases of quiescent tuberculosis were thought to require supervision and are X rayed at six-monthly intervals in order to detect any early evidence of reactivation

Nine healed tuberculous lesions, not requiring supervision, were discovered and nine other cases show evidence of non-tuberculous disease Two abnormal hearts and a symptomless cervical rib are included among eight structural abnormalities discovered

* * *

The number of cases found agrees tolerably well with the findings of other investigators, considering the small total involved. The sex incidence of those attending is interesting, for in this company there is a preponderance of women The excess of men's attendance is due to two reasons First, intensive recruiting was done in two large shops, which supplied 25% of the total attendances, and it happened that in these two shops the men predominated; secondly, the women were afraid that they might have to strip in public Later on, when this was pointed out to me, I took care to publish the fact that the women were given pyjama jackets to wear, and after that they arrived in larger numbers

The numbers and age distribution of those attending are shown on the graph, and this reveals an interesting disparity in age incidence amongst the younger workers, the boys coming in steady numbers from the age of sixteen, whereas the girls show a gradually increasing attendance until they reach a steady level at the age of twenty This I attribute to the fact that the boys are taught from an early age that as soon as they start work they are independent, whereas the girls learn that they must ask mother's advice until they are married I repeatedly heard that, although the girls were willing to come, the mother had advised against it Later on I advised the girls to make up their own minds and not to ask mother This finding is of importance, for it is among just this sex and age group—namely, girls between 14 and 22—that the incidence of tuberculosis is causing concern Any outside propaganda addressed to the girls will also have to be addressed to their mothers

The total number of suspect cases is probably swollen by the attendance of people who have had tuberculosis and have been discharged as cured from sanatoria and by people whose relatives have suffered or are suffering from the disease The scheme served a useful purpose in that those who feared tuberculosis for one of these reasons but did not wish to draw attention to the fact were able, by attendance at the clinic, to set their fear at rest without going through the (to them) terrible formality of a tuberculosis dispensary, or receiving the unsatisfactory reassurance of a probably hurried examination by their overworked panel doctor

THE WORKERS' VIEWPOINT

The attitude of the worker to tuberculosis needs to be clearly understood He is inclined to hold the medical profession in profound suspicion, and this suspicion is even more keenly aroused if an attempt is made to look after him by a method of which he has had no previous experience, direct or indirect Tuberculosis is to him an inevitably fatal disease, with which he associates loss of work for the long period during which he is dying, whereas observation of his afflicted colleagues tends to show that he could very well have remained at work for another month or two at least Any attempt therefore to get him to take early preventive measures is handicapped When recruiting, I often heard " If I have tuberculosis, I would rather not know about it " This attitude is based on a deep-rooted fear, for the worker realises that if he has tuberculosis and does not know about it he can keep on at work until he drops dead, and then the care of his wife and family will fall on the state and he need not worry about them, whereas if he goes into a sanatorium he lies in bed worrying about his financial commitments

In addition to these financial worries, the worker looks on tuberculosis as an " unclean " disease, like leprosy or venereal disease, and the accusation of tuberculosis is used as a veiled insult as is that of VD

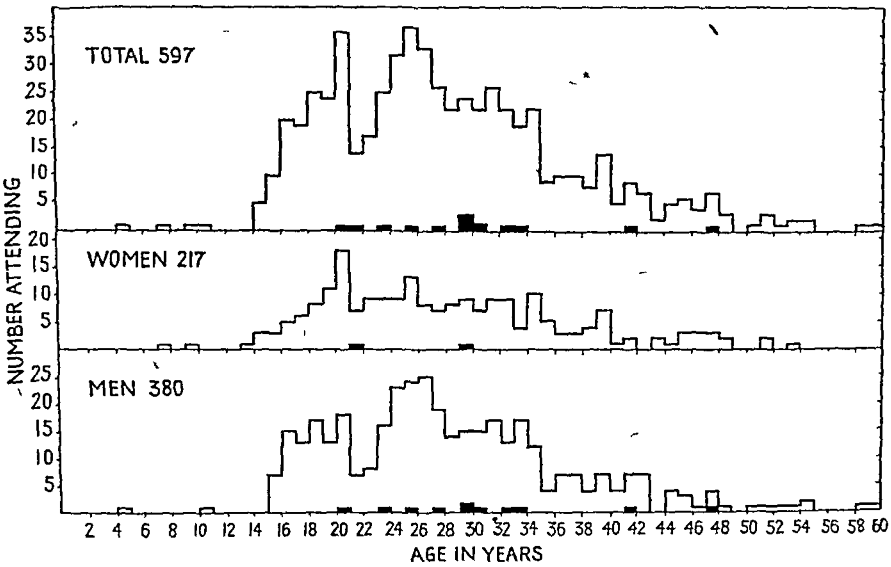
A male worker aged 24 from a mixed shop was suspected by his colleagues, on account of his sallow complexion and a rumour of sanatorium attendance, to be tuberculous This was repeatedly and with innuendo suggested to him, with the corollary added that that being so he was not wanted in his community After some months he broke down under this continued suggestion, he lost weight, slept badly, lost his appetite and became temperamentally nervous Finally, he began to doubt whether his colleagues were not correct, and came to see me Examination and X ray revealed no trace of organic disease, and he returned to his job Inquiry revealed that feeling had been running very high against him, and that the story had originated from a female co-worker who had had an empyema in the past and considered herself unduly susceptible to tuberculosis.

If a man is shown to be tuberculous, he is afraid his colleagues will shun him, and the works doctor must not be seen too often in conversation with a worker suspected by his colleagues.

The financial aspect should be carefully investigated before any large-scale scheme of mass radiography is contemplated. For the success of the scheme full wages should be paid to the worker while he is receiving treatment—that is to say, he should not have his financial commitments in any way affected as a result of taking early sanatorium treatment. To make this possible I suggest the use of a club system whereby everyone who is X rayed subscribes weekly to an insurance fund from which he can receive benefit if he is found to be suffering from tuberculosis.

With his possible financial embarrassment provided for, the worker's next doubt is whether the whole scheme may not be a hoax or a trick for getting him out of the company. A guarantee must therefore be given that, if the radiogram reveals that he is tuberculous, he will not be dismissed permanently, but will be taken back into employment on his return from treatment. It is essential that there should be no reservation in this assurance.

The workers should be told just what is going to happen—namely, that they are going to be surveyed for tuberculosis. Any subterfuge about pictures for the good of their health, or helping in an experimental survey for the good of mankind, is inadvisable (although, if it is pointed out that their cooperation is required for an admitted mass research, they will collaborate willingly just the same, as I proved for myself on another occasion). It is fatal to put forward half truths, since the worker checks up on every statement made to him, and if he can find a doubtful point he will suspect the whole scheme. This applies to any new plan, whether it be about health or wage payment.



Recruitment for the scheme was at first difficult, and had to be done by direct personal approach. This was better received in the shops known to be working under industrial hazard, such as the paint-spraying and metal-plating departments, which are conscious of the dangers to health that their occupation entails. Once a few people from a shop had attended, others followed; also all new employees examined by me were sent for X ray. Later on, when the existence of the scheme was more widely known, notices were posted in the shops, and names quickly obtained.

Sometimes I gave a talk to an entire shop, but this needs to be done carefully. One shop of thirty women whom I approached in the early days became alarmed and as a result of the talk refused to work any longer in a shop where they were exposed to enhanced risk of tuberculosis. For, if this were not so, why had I bothered to talk to them? Such a reaction may well occur when the average mental level of the shop is low and there is no dilution with more mature and balanced workers, from whom the others may obtain reassurance.

THE MEDICAL VIEWPOINT

The results must of course be confidential between the doctor and the worker, not conveyed to a third person without the patient's permission. Permission having been obtained, there can be no objection to notifying the welfare department so that contact with him is not lost. This course was adopted and no worker was forced to adopt any treatment he did not wish to undergo. The strictly professional basis ensures that there shall be no victimisation of any tuberculous person by his employer, and it is this danger which is holding back the trade unions from ready acceptance of any comprehensive scheme.

It is important to inform the worker of the result of the X ray quickly, and so set his mind at rest. A swift report of the result was found to bring in further recruits immediately, whereas delay was apt to kill further response from that shop. Any small abnormality discovered should be mentioned in clear medical language so that the worker can, if he wishes, obtain a second medical opinion on the information supplied. Delayed reporting or obscure allusions are more detrimental to the worker's peace of mind and to the success of the scheme than is a true statement of fact made promptly.

Two other small points are worthy of note: the girls and the men should be X rayed on different days or in different groups, and the girls should be reassured that menstruation is no bar to examination.

Supplementary Notes *by* Miss Clark

During a period when volunteers were required to submit themselves for X-ray examination in order to test the efficiency of miniature radiography, Dr Stanford suggested the inclusion of factory workers, and this offer was welcomed in view of the experience to be gained from a type of subject entirely different from those hitherto encountered in this work. The first problem was that the workers had to come not only at their own expense but in their own time, and therefore after the normal working hours of my department, which meant that two people stayed voluntarily for an hour or more after a heavy day's work. During the winter months this routine was further complicated by the blackout.

BOOKING ROUTINE

It was noticeable that, in spite of the simplicity of the record card provided, help had frequently to be given to the workers in its interpretation. It was also found to be surprisingly difficult to get a group of people to line up in numerical order even when they were provided with numbered cards. This is important as the indirect radiograms are taken in numbered sequence in order to avoid confusion when the completed strip is projected for reporting. Such confusion is of course avoided when the record card is incorporated photographically on the miniature radiogram.

All the records were made in the first instance on these cards and copied the next morning into the departmental record books in order to avoid delay at the time of examination. Data were recorded as to height, weight and chest thickness at the level of the axilla, both on inspiration and expiration, and then these figures were correlated with exposure technique, but after experience had been gained from 2000 subjects, of which this factory group formed a part, it was decided that an expert radiographer who was doing this work continuously could judge adequately the exposure required for each ndividual by simple observation of the development and hest expansion of each one, and it was therefore decided o discontinue these measurements

It was noticed that the physique of these factory workers was in general inferior to that of a previous group of outdoor workers There was a tendency to underexpose the earlier groups, especially the women, who were mainly of very slight physique, but when short exposures were given the breast tissues were not penetrated However, sufficient experience was soon gained to allow of a satisfactory adjustment of exposure

REACTION OF THE WORKERS

The men showed considerable interest in the X-ray apparatus and were amenable in every way, particularly when they found that the examination occupied so little time On one occasion they were asked to submit to a second series of exposures on a trial X-ray unit, and there was no hesitation in doing so, indeed, there was genuine cooperation throughout

The girls needed more discreet handling It is clear that they would not have submitted to appearing without a chest covering, and they were provided with pyjama coats In a number of cases the diaphragm was obscured by corsets and a little tact was sometimes needed to encourage their removal, otherwise, on reaching the exposure stand the corsets were rolled down sufficiently low to miss overshadowing the lung fields, and only in one or two instances was such overshadowing, with compression, noticeable in the radiographic results A few really outsize subjects were encountered, and on these occasions three varied exposures were made to ensure obtaining sufficient density on at least one of the films Occasionally a full-sized radiogram was taken during this first visit to ensure obtaining a diagnostic result, actually the miniatures proved to be quite satisfactory

With children three exposures were made ranging from 10 to 30 mA sec and generally these were all within the range of diagnostic requirements, due to the great latitude of the film employed (HPx) The children presented no difficulty except in the case of a point-blank refusal which we were forced to accept a boy whose two small sisters were quite docile Wives not employed by the firm were usually rather shy about the whole procedure, but it was often possible to examine the "family" separately, either before or after the main group of workers

The films were developed the following morning, and the radiologist reported on the dried miniature by projection during the afternoon The reports were immediately transferred to the cards which were posted direct to Dr Stanford, reaching him within 36 hours of the time the examination was made The trained staff employed consisted of a senior and junior radiographer The booking and marshalling was undertaken by volunteers among the factory workers

It is of interest to note that in one instance a processing fault (drying marks known as tear drops) led to an error in diagnosis (being interpreted as metastases), but the routine direct radiogram taken later enabled the error to be corrected This case served to bring to notice the possibility of such errors being made due to technical defects, but it should be noted that of this particular defect only one instance has occurred in 5500 exposures

TECHNICAL FACTORS

Both miniature and full-sized radiograms were taken on a standard four-valve unit with fine focus rotating-anode tube The camera unit for the miniature work is fitted with a "Contax" camera having a 5 cm f 1 5 "Sonnar" lens, Levy-West yellow-green fluorescent screen with standard lead glass protection, and a stationary radiographic grid

The miniature radiograms were taken under the following conditions, 85 kV peak, 35 to 45 mA sec, and 36 in anode-screen distance, employing Ilford HPx film developed for 8 min in "Blue Label" developer The full-sized radiograms were taken at 57 to 67 kV peak, 20 mA sec and 66 in anode-film distance

Viewing of the miniature radiograms was by projection to a size of ca 6 in square, interpretation was by the two radiologists independently

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MINIATURE SCARLET FEVER AFTER A DICK TEST

Hugh R E Wallis, M B
FLIGHT LIEUTENANT, RAFVR

Miniature scarlet fever has been described after the injection of immunising doses of scarlatinal toxin Five hundred times the skin-test dose is the lowest amount recorded to have caused this reaction The symptoms described are scarlatinal rash and desquamation, malaise, headache, vomiting, diarrhœa, pyrexia up to 101° F, and in children urticaria and joint pains[1] There is no record of such reactions occurring after the test dose in a Dick test (0 2 c cm of a 1 in 1000 dilution of broth filtrate) The positive reactions to the Dick test are described by the Dicks[2] as showing "All gradations from small areas of faint colour to intensely red reactions 30–60 mm in diameter"

A WAAF nursing orderly was in contact with a case of scarlet fever in March She had not had scarlet fever herself A Dick test was performed, and a finely punctate erythema which faded on pressure appeared on her forearm and neck and the opposite arm (which was not used as a control) She felt ill and was confined to bed for 5 days She did not vomit and had no temperature throughout The rash lasted for 10 days and then peeled in the characteristic ringed manner A Schultz Charlton test performed rather late was negative, a throat swab showed "Mildly hæmolytic streptococci" No similar reactions were seen among other orderlies and patients tested with the same batch of toxin, and at this stage it seemed possible that she might have had a mild attack of scarlet fever, but the spread of the rash from the site of injection was against this theory

Three months later another Dick test was performed This time the toxin was diluted 50 times, so that she had 0 004 c cm of the standard toxin This was injected intradermally in the right forearm The usual precaution of clearing the needle was taken The next day a punctate rash appeared over the whole flexor aspect of the forearm, and a day later the same type of rash appeared at the base of the neck and on the other forearm A control injection of 0 2 c cm of undiluted heated toxin in the leg produced an irregular area of reddening about 5 cm in diameter which rapidly disappeared A Schultz Charlton test was performed on the right arm, and this showed local blanching The patient's temperature was raised to 99° F, she vomited several times and had a headache She was again in bed for 5 days The temperature fell to normal in 2 days The rash began to peel on the 6th day after injection

This seems to be a clear case of miniature scarlet fever after a very small dose of scarlatinal toxin It would be interesting to see the reaction of this patient if she contracted scarlet fever, or even if anyone attempted to immunise her with the usual doses of toxin

I am indebted to Dr Philip Evans, who searched the published work for me, and to the patient, who consented to undergo the second injection and make herself "a human guineapig," *as she called it*

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[1] Dick, G F and G H Scarlet Fever, Chicago, 1938 Pp 89, 90
[2] *Ibid* p 81

Evacuation of Mentally Defective Children—The education authorities for London and Birmingham have some vacancies at their residential special schools in reception areas which they are willing to place at the disposal of other authorities who wish to evacuate mentally defective children

Chartered Society of Massage and Medical Gymnastics—The annual congress of this society will be held at BMA House, Tavistock Square, London, WC1, on Sept 18 and 19 The opening lecture will be given at 2 PM by Prof J A Ryle who will speak on the re making of man Afterwards Prof F R Fraser will describe the place of rehabilitation in the treatment of patients, and at 6 PM Lord Horder president of the society, will deliver the founders' lecture His subject will be rehabilitation the part played by physical medicine At 10 AM on the second day of the *meeting Surgeon Lieut* Commander John Bunyan, LDS, will discuss the treatment of wounds and burns by the envelope method and at 11 30 AM Dr Vaclav Benes will lecture on physical training organisation in Czechoslovakia Further information may be had from the secretary of the society, Mount Lodge, Amersham, Bucks

Reviews of Books

Doctor Bard of Hyde Park

J Brett Langstaff New York E P Dutton Pp 365 $3 75

In the middle of the eighteenth century Dr John Bard of New York resolved that his son who wished to adopt the medical profession should have the advantage, which had not been his, of education in a British medical school, and at some inconvenience to his purse he sent his son Samuel to study at the University of Edinburgh, which was at that time rising into great reputation Sam Bard arrived in Great Britain in the year 1763, after having spent five months as a prisoner of war in France He stayed some time in London attending the hospitals and forming connexions with the medical men and others to whom he had letters of introduction, and in the autumn of that year he entered on his degree course with an enthusiasm and assiduity which had their merited reward. He seems to have become during his residence there not merely an accomplished physician but popular and highly respected His principal teachers were Cullen and the two Munros After taking his degree, family ties took him back to New York in 1766, filled with ideas of creating a medical school in his native state He entered into partnership with his father at the age of twenty-four, and had thirty-two years of practice interrupted by the War of Independence but on the whole so steadily prosperous that at the age of fifty-six he was able to retire from the city and live in a house which he had built at the estate of Hyde Park on the banks of the Hudson His retirement was not complete for he often returned to the city to see old patients in consultation with his successor, and in the remaining twenty-three years of his life he was active in organising medical education, and in every scheme which promised medical, horticultural or religious advance At his death there was hardly a sphere of progress which he had not touched To the medical profession in this country his work is chiefly of interest because of the far-seeing wisdom he displayed in the organisation of the teaching of medicine, but to his own generation he was the embodiment of all the virtues which distinguish the beloved physician Dr Brett Langstaff in this account of the lives and times of the Bards, father and son (for John Bard was also a remarkable man) has written a captivating story The one fault—easily remedied in another edition—is the absence of a map of the New York of the time The reader continually hungers for it, and would welcome another of the environs, including the estate of Hyde Park

Psychiatric Dictionary

Leland E Hinsie, MD, professor of psychiatry, College of Physicians and Surgeons, Columbia University, New York, Jacob Shatzky, PhD, research librarian, New York State Psychiatric Institution London Humphrey Milford, Oxford University Press Pp 559 55s

It is natural to stand in awe before the compilers of dictionaries and to wish them judged only by their peers, men who are acquainted with the immensity of the task, but here is a hybrid, half dictionary half encyclopædia, swollen with obsolete terms, psychopathological excursions and thumbnail sketches of syndromes it is impossible to remain awe-stricken before it In it, psycho-analytical bias is carried to the length of including as technical terms any descriptive phrase in the writings of Freud and other analysts, thus "wit, allusion in," "wit, critical," "wit, cynical," "wit, double meaning in," "wit, doubt in," and some further twenty odd varieties of wit, or references to it, all from one book of Freud, are listed as separate entries The pronunciation is recorded of even the simplest words, like egg, first, food, form, dream, maid (defined only as "a virgin man, one who has not had sexual intercourse Obsolete"), however with the exception of "ego" (indefensibly given with the "e" as in "negro") the pronunciation of terms is sound, differences between English and American usage being accepted Proper names in the book are not always so happily dealt with Clouston and Esquirol are mispronounced, MacDougall and Schilder are listed as Americans, yet Kronfeld still as a German, Henry Maudsley is omitted altogether (Mercier is included), Berze is misspelt Berz, and Jack the Ripper is said to have been an epileptic London physician, which will come as news to Londoners The system of cross references leads to such unnecessary entries as "cat, belief one is a", "origin, belief that one is of divine", and surely no-one should be encouraged to find or use "galeanthropy" "uranomania" or other of the monstrous Greek compounds with which the book swarms French terms are well represented but German ones less so Gedankenlautwerden, Grubelsucht and Beziehungswahn are lacking So also is mandala, latah is not mentioned, but miryachit (apparently a Siberian variant) is fully noticed Anosognosia is omitted, as is also its German equivalent "Anton's sign." But the most serious defect in this comprehensive and well-produced thesaurus is its poor treatment of some of the commonest words in psychiatry, such as hysteria, neurosis, schizophrenia or dementia præcox Here the book fails to provide, as it should, a standard which would give some stability to the meaning of terms still confusingly mutable though in constant use

The Handling of Chromosomes

C D Darlington, FRS, L F La Cour London Allen and Unwin Pp 165 8*s* 6*d*

One of the writers of this book has probably done more than any other living man to increase our knowledge of chromosomes, the other has made useful contributions to the technique of studying them They have collaborated to the advantage of fellow cytologists in preparing this authoritative account of the smearing and squashing methods which are nowadays largely replacing the familiar section techniques Some may object to the insistence on the employment of apochromatics for high-power object-glasses, and to call Feulgen's reagent "leuco-basic fuchsin" is a misleading oversimplification The use made of the term "osmic acid" has actually misled the writers of the book into classifying as an acid a substance which forms no hydrogen ions, is a non electrolyte, and only produces salts by a roundabout process The photographic illustrations, which are not very helpful, might have been omitted, thus reducing the cost Such defects, however, are trivial The book is not intended for those who need to understand the physics and chemistry of what they are doing, but for the practical man who wants to make good preparations of chromosomes, and it is full of helpful direct information The calendar showing in what organisms chromosomes may be studied each month of the year is novel and useful

Handbook of Practical Bacteriology

(6th ed) T J Mackie, MD Glasg, DPH, J E McCartney, MD, DSc Edin Edinburgh E and S Livingstone Pp 675 17*s* 6*d*

Almost a hundred pages of this edition are needed to set out the important advances in bacteriological technique and knowledge made in the last four years New methods of diagnosing diphtheria and intestinal infections, the use of *p*-aminobenzoic acid in culture media and the bacteriological examination of the air are among the subjects now discussed The revised section on virus diseases gives the new facts about lymphocytic choriomeningitis and influenza but relevant information about the common cold fits easily into a third of a page and infective mononucleosis is dismissed rather summarily in half a page Some recent bacteriological work is accepted perhaps a little on trust and a note on the recognition of sulphanilamide-resistant strains of bacteria might have been added The book fulfils its intention to serve students, technicians and routine bacteriologists There is a good general introduction, technical methods are selected with care, instructions are to the point and the book is well produced and can still be comfortably held in one hand

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'Antostab' (Boots), prepared from the serum of pregnant mares, contains 200 international units of mare's serum gonadotrophin per ampoule It is a dry powder and before use is dissolved in the normal saline supplied with it It is given intramuscularly and is recommended for cases of primary and secondary amenorrhœa and other conditions associated with anterior pituitary and ovarian dysfunction.

THE LANCET

LONDON SATURDAY, AUGUST 22, 1942

UTILITY FIRST-AID

THE long-established methods of first-aid taught by the St John and St Andrew Ambulance Associations and the British Red Cross remain fundamentally sound, but they have now to be adjusted to meet the conditions of aerial warfare TRUETA laid down, at Barcelona, the principle that in a blitz casualties must be got to hospital as soon as possible and with the minimum of handling To meet this new demand for simplicity and speed, methods of treatment and terminology have alike been modified Booklets setting out the new point of view have been written by members of first-aid and stretcher parties experienced in raids Lectures have been given to the WVS on immediate aid COWELL has published a five-lecture course for the Home Guard on essential first-aid At a recent course for Home Guard medical officers, H A HARRIS insisted that in the teaching of first-aid all frills and trimmings must be cut out in favour of bare essentials A Home Guard battalion has issued its members with a folder the size of three luggage labels which details the minima of assistance, and provides a casualty label should the man be wounded Another folder[1] designed by KEOGH sets out in a few words and pictures what every soldier must know about first aid In each of the twelve Home Security regions of the country there is a regional training school, originally started for rescue parties, and later expanded to include first-aiders Leaders of rescue, first-aid and stretcher parties now go for intensive training to these schools, so that they may return and pass on the information to their squads Some of the schools are run by the local authorities, some are the responsibility of the regional administration

Details vary in the different training centres, but the principles of the new utility first-aid are accepted in all Thus all are taught that the man who first reaches a casualty should protect him as far as possible from any immediate source of danger such as moving machinery, electric cables or masonry which is threatening to fall The first step in direct treatment is to stop bleeding by dry dressings and firm bandaging Experience has shown that tourniquets are seldom required and it is a relief that the Samway tourniquet, first issued, has now been withdrawn Most of the new writers agree that a tourniquet should only be used for an injury amputation Even pressure points are given less prominence than they were The next essential is to see that the air-passages are clear, rubble and dust must be removed from the mouth and artificial respiration given if necessary, especially if there is reason to suspect coal-gas poisoning The methods suggested are Schafer's Sylvester's, the rocking method and the direct method Cleansing of wounds has to be omitted, because it is usually impossible at the site of the incident, and in any case wastes time Splinting has been reduced to a minimum, which again saves time and lessens handling Application of splints in the dark is a stiff ordeal even for a skilled first-aider and certainly for the patient The patient's suffering—and therefore his shock—will be less if a broken arm is simply tied to the trunk with broad bandages, or if a fracture of the lower limb is treated by placing a rolled blanket between the legs and tying them together The exception is a fracture of the patella, which should *always* be splinted First-aid for burns now consists in covering them with a dry dressing and speeding the patient to hospital Blanketing should be carefully taught—the Wanstead method is now universal—and first-aiders should be well drilled in lifting casualties gently on to stretchers and in loading and unloading ambulances "Careless handling may lose life" is a good motto The danger period is between the time of injury and rescue and of arrival at hospital, the good first-aider will be out to make this interval as short as possible

When many casualties have to be dealt with at one incident the worst must have priority in first-aid and transport thus the first-aider must be able to recognise both the nature of the injury and its gravity The concept is new, and is not touched in any of the standard manuals, but it must be taught and well taught Thus, while teaching must be intensely practical, there must be a clear understanding of underlying principles, particularly among leaders of parties, for they not only have the responsibility of training others but must themselves be capable of quick decision in the more difficult cases Doctors must take full part in instruction, to make certain that the standard is kept at a safe and efficient level This cannot be left entirely to lay instructors, however keen Sense of proportion about cases and treatment can only be acquired through medical training and experience Shock provides a good example of the difficulty it is an exceptional candidate for a first-aid certificate who has an intelligent grasp of this condition, even from his own necessarily limited point of view Everyone should know the essentials of what might be called immediate help "First-aid" has its field and practice defined by usage, and it is to bring out the difference that such terms as "essential aid" and "blitz aid" have been used The standard doctrines have not been upset, only modified, first principles remain unchanged and a sound grasp of them enables well-taught first-aiders to meet emergencies with that intelligence which rule-of-thumb methods can never confer

PROCAINE AND PERCAINE

IN the autumn of 1939 a patient died in Bournemouth because 'Percaine' solution was dispensed by a chemist when the doctor wanted procaine Under "Medicine and the Law" this week there is an account of another fatality, in an Oxfordshire hospital Here, according to a newspaper report of the inquest, the highly experienced hospital dispenser sent percaine crystals to the operating theatre instead of procaine, thinking they were similar substances The surgeon thus came to inject 1 25 grammes of percaine in 5% solution, some ten times the maximum dose, though safe enough if the solution had been procaine A correspondent treating a case of fibrositis was lately told by a consultant that "an injection of percaine or novocain into that area once or twice a week would be helpful" Thinking that these were both proprietary names for procaine, which has many,[1] she ordered a 1% solution Fortunately, after the injection of 6 c cm the patient's reaction suggested that something was wrong and no more was given, so that the patient escaped with nothing worse than a few hours of collapse These examples show that the names percaine and procaine are sufficiently alike to lead to confusion, and though recent correspondence in our columns suggests that the safe dose of percaine has yet to be decided it is roughly a tenth that of procaine Two years ago[2] we expressed the hope that the manufacturers of percaine would sell their product here under the name by which it is known in the United States—'Nupercaine' The makers retorted,[3] with some justice, that the trade mark 'Percaine' was registered in 1918, whereas procaine was not adopted by the BP until 1932, so that it was for the BP to make a change if one was necessary The BP name was no doubt adopted because it was already official in the United States Pharmacopœia, and the BP and USP try to conform in nomenclature as closely as possible The position was considered a year ago by the BP Commission, but it was not then thought possible to take any action The makers, too, are naturally loath to incur the great expense and inconvenience of discarding a trade name which is used throughout Europe and the British Empire and in nine-tenths of the published work on this compound If further accidents are to be avoided either BP Commission or manufacturer must go to much trouble and expense, but the danger is serious, and a friendly discussion between the two would surely evolve a solution

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[1] See *Lancet*, 1941, ii, 313

WAR AND THE NERVES

The incidence of neurosis in the civilian population is one of the many respects in which the war has falsified prediction Before its outbreak enormous civilian casualties were prepared for, it was expected that our cities would, like Rotterdam, be overwhelmed with devastating air-raids which would kill many, injure more and drive still more into acute neurotic illness When the air-raids came, they caused fewer casualties than corresponding material damage, and their effect in the causation of neurosis has been, as Dr Lewis pointed out in our last issue, almost negligible If what has been written on neurosis in the Forces is compared with Lewis's findings in civilian life considerable light is thrown on ætiology In both types of population the importance of predisposition has been revealed There had been previous neurotic illness in three-quarters of the neurotic patients presenting themselves to a general practitioner during the worst period of air-raids London has known In as high a proportion the air-raids played a part in exacerbating the illness But while only a quarter of the neurotically predisposed made great improvement or recovered, 70% of the others did It is clear that evacuation has been a powerful method of prophylaxis against air-raid neurosis Most of those who have wished to do so have been able to take advantage of Government schemes for evacuation, and the population that has stayed behind in the danger points has been *self-selected for stability This is one of the* main ways in which the stresses imposed on Service personnel have differed from those inflicted on the civilian The soldier is posted to this or that point regardless of his inclinations, and when he finds things proving too much for him, it is not open to him to get out of it Many of the neurotic pictures shown by the soldier have taken the form of attempts in that direction—absence without leave, amnesic and fugue states, and desertion

The stresses of war are manifold; and if fear has not been very prominent as a cause of illness, that is not so with long-continued worry and other hardships such as the dislocation of family life The break up of the home has been a feature common to military and civilian life but whereas for the civilian it has been, partly at least, voluntary, for the soldier it has been compulsory, and even families where mutual dependance is strongest have been unable to resist separation It is not surprising that many of the men who were fairly adjusted to civilian life but broke down rapidly after enlistment are more than usually dependent on their wives and emotionally tied to their families The same stress when voluntarily or when compulsorily submitted to may have a very different degree of rigour Physical factors *have not been very important in the production of* neurosis The management of our food-supplies has been one of the outstanding successes of war time administration, and defects of nutrition have in general played a minor rôle In the hyperacute anxiety states physical factors have played a larger part Long-continued physical exertion, inadequate food and sleep were largely responsible for the more severe neurotic states seen after Dunkirk, and are associated with exposure and psychogenic stimuli in similar syndromes seen sometimes in shipwrecked seamen These states have been remarkable for their rarity in civilian life—at least in this country in this war, though Mira has reported their frequency in the Spanish civil war Lewis refers to formes frustes of this manifestation For a few days after severe bombing, especially with several sleepless nights, a state of acute but temporary anxiety may develop which passes off with rest and proper care The preference shown by the public for deep rather than surface shelters probably depends on the relief from the noise of an air-raid and its associated feeling of tension, the near-certainty of safety, and the possibility of refreshing sleep

Both age and youth have provided their special problems, although air-raids seem to have little specific effect on the old and the young The break-up and confusion of family life have made the care of those who need it more than normally difficult Institutions have received larger numbers of people enfeebled by age and arteriosclerosis, and in the adolescent there has been a considerable rise in the frequency of juvenile delinquency The contention that our society is built on a basis of stable family life receives confirmation here, and factors that have a disruptive effect on the one cannot leave the other unaffected The importance of this for neurosis lies in its relation to communal morale In the army regimental traditions and company life, and in the navy the ship's company, make for the soldier or sailor a new family unit, and the extent to which he can be reintegrated and his emotional needs satisfied in this way will largely determine his stability, his happiness and his usefulness The proximity of death, hardship and the ubiquity of destructive forces give existence a new meaning In this war, as in earlier ones there is a significant fall in the frequency of suicide New aims for which to live, work that satisfies higher as well as more immediate needs, a tightening of the bonds which draw our community together and unite it with the rest of humanity provide an inspiration which does much to offset the circumstances that lead to discouragement and neurosis

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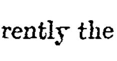
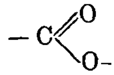
[1] The Extra Pharmacopœia gives Allocaine, Syncaine Æthocaine, Kerocain, Neocaine, Novocain, Planocaine and Sevicaine

[2] *Lancet*, 1939, ii, 944

[3] *Ibid*, p 1097

MEASURING SULPHONAMIDE ACTIVITY

THE dosage of chemotherapeutic agents depends on a large number of factors, many of which relate to the host Even their in-vitro action, however, varies greatly under different conditions, and not long ago it was counted an achievement to demonstrate any in-vitro activity in many agents of proved therapeutic value With sulphonamides, the factors governing in-vitro activity have now been largely disentangled The effects of different media have been allocated to definite antagonistic substances, of which *p*-aminobenzoate is the principal one These are now recognised not as extraneous factors sent to plague the chemotherapist but as fundamental to the action of the drugs The sulphonamides are bacteriostatic because they are sufficiently similar in structure to *p*-aminobenzoate to oust it from the essential bacterial enzymes which use it This functional relationship to *p*-aminobenzoate has now been used to give numerical values to the activities of the different sulphonamides The ratio S/P, where S represents the concentration of a sulphonamide necessary for bacteriostasis in the presence of different concentrations P of *p* aminobenzoate, is almost constant for a given sulphonamide and a given organism, and is a measure of the purely antibacterial action of the drug The smaller this ratio—that is, the smaller the quantity of drug needed for bacteriostasis—the more affinity does the drug have for the system it is disturbing Such ratios have now been determined for various organisms and drugs, they have been referred to as antibacterial indices,[1] or as measuring bacteriostatic potency,[2] and their reciprocals have been called bacteriostatic constants[3] They are formally related to Ehrlich's chemotherapeutic index, though the connexion is by computation and not yet by experiment[1]

The results of WYSS and others[4] given in the table, indicate that to both sulphanilamide (the least active drug) and sulphathiazole (the most active) the susceptibilities of seven organisms were in practically the same order, the ratio between the indices for the two drugs was much the same with each organism Thus, as GREEN and PARKIN point out on our opening page, it is a fallacy to think that a particular sulphonamide is specific for a particular organism the most active drug against one organism is normally the most active against all All workers agree in principle with these results but give different numerical values for the antibacterial indices, almost certainly because they adopt different conditions of growth and different criteria of bacteriostasis Thus WYSS and his colleagues observed the quantity of drug necessary to reduce bacterial growth in 16 hours to half its normal amount WOOD[3] judged by the absence of visible growth during 5 days and therefore placed sulphadiazine equal in activity to sulphapyridine, while ROSE and FOX[2] agree with WYSS in putting the activity of sulphadiazine equal to that of sulphathiazole Of the conditions of growth which affect the indices, SCHMELKES and others[5] have shown pH to be of fundamental importance, and have demonstrated that the increase in potency of all sulphonamides with increase in pH is in accord with other evidence that the actual functioning part of a sulphonamide is an anion In solutions of different sulphonamides whose strength is adjusted to give equal activity, the concentrations of anions are of the same order of magnitude[6] It is apparently the group  $-\mathrm{S}\begin{smallmatrix}\mathrm{O}\\ \mathrm{NH_2}\\ \mathrm{O^-}\end{smallmatrix}$ which simulates  $-\mathrm{C}\begin{smallmatrix}\mathrm{O}\\ \mathrm{O^-}\end{smallmatrix}$ at the drug receptor Thus differences between the antibacterial indices of the sulphonamides for a given organism largely depend on the amount of anion in their solutions

DECREASING ACTIVITY →

↓ DECREASING SUSCEPTIBILITY	Sulphathiazole	Sulphadiazine	Sulphapyridine	Sulphacetamide	Sulphaguanidine	Sulphanilamide
Bact coli	27 (36)	43 (100)	450 (100)	534	3960 (1000)	2000 (1610)
Bact aerogenes	45					3220
Proteus vulgaris	55					4000
Staph aureus	53	92	416	534	4570	4660
S typhimurium	92					6650
B acidophilus	133					8000
Ps pyocyanea	184					13330

ANTIBACTERIAL INDICES OF SULPHONAMIDES

Compiled from Wyss et al[4] and Wood[3] Wood s values are in parentheses The figures for different organisms are in the main comparable, but not entirely so because conditions of growth were not inform

In the clinical use of sulphonamides many more factors—differences in solubility, in absorption, detoxication and excretion by the host and even in availability and cost—must be taken into account in choosing the drug best suited to a particular purpose For instance, we choose sulphaguanidine to attack intestinal organisms although its in-vitro activity is low On the other hand, in the choice of sulphathiazole for staphylococcal and mixed infections antibacterial index is the overriding consideration Thus although studies in vitro cannot include all the factors which have to be considered in practical chemotherapy, yet with the present use of defined media they are giving us fairly accurate information of great practical value Animal experiment, it must be remembered, introduces new and unknown factors to the study of human infections

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[1] McIlwain H Brit J exp Path 1942 23 95
[2] Rose H M and Fox C L jun Science 1942, 95 412
[3] Wood W B jun J exp Med 1942 75 369
[4] Wyss O Grunbaugh K K and Schmelkes, F C Proc Soc exp Biol N Y 1942 49, 618
[5] Schmelkes F C Wyss O Marks, H C, Ludwig B J and Strandskov F B Proc Soc exp Biol, N Y 1942 50 145
[6] Fox, C L jun and Rose H M Ibid, 1942 50, 142

Annotations

BOOKS FOR POLAND

INTELLECTUAL life in Poland is being systematically suppressed. When the time comes, it will be restored equally systematically, and that is a task in which our country hopes to share. Books can be replaced, and the Poles will themselves revive their nation's learning: anyone who has read Eve Curie's life of her mother knows that. We can at least help to put back the books. At St. Andrews University, which has specially close links with Polish officials and students, a committee has been formed to invite promises of books to be made available after the war. The committee, which includes Sir James Irvine, principal of the university, asks the help of British universities, learned societies and libraries in providing surplus sets, or parts of sets, of transactions or proceedings, standard works, textbooks, journals and periodicals in every department of learning. Individual scholars may be able to promise books from their own shelves, memorial collections or sets of English classics, or subscriptions for the purchase of books. No attempt will be made to accumulate books at present, but a catalogue of books promised will be compiled and handed to the Polish government, which will be responsible for their transport from the donors to Poland when the time comes. Those who will help should write to Mr. N. S. Snodgrass, secretary to the Polish Libraries Committee, The University, St. Andrews, Dundee.

A RARE BONE DISEASE

MELORHEOSTOSIS was first described by Leri and Joanny in France in 1922; Franklin and Matheson[1] give details of a recent case discovered in this country. Leri described the condition as "a flowing hyperostosis of a single extremity," and reported two cases. Since then about 40 cases have been recorded, but few in Great Britain. In 1932 Kraft reviewed 16 reported cases—5 in Italy, 4 in Germany, 3 in America, 2 in France, 1 in Poland and 1 in Sweden. The hyperostosis usually but not necessarily chiefly affects the bones of one limb and its girdle, and is confined to one aspect (lateral or medial) of the affected bones. As a rule the skeletal changes are confined to one side of the body. The X-ray appearance of the new bone is like the wax running down the side of a candle. There are no characteristic physical signs though the patient often complains of pain or disability due to the bone thickening.

The main trouble of the woman of 41, described by Franklin and Matheson, was the great size and weight of her right leg, associated with varicose veins, œdema and recurrent ulceration of the dorsum of the foot. The bone condition was first noted in her eleventh year, when her left leg was found to be shorter than her right; since that time she had worn a built-up surgical boot on the left foot, to adjust the difference between the two limbs. Typical changes were present in many of the bones of the right side of the body, including the skull, several vertebræ, two ribs, the humerus and ulna, several carpals, metacarpals and phalanges, the pelvis, femur, patella, tibia, fibula, all the tarsals and several metatarsals and phalanges. The large number of bones implicated is unusual. The diagnosis of these cases is radiological, the appearance of thickening down one aspect of the bones being due to ivory-like proliferation of cortical bone. The sclerosis seems to begin inside the bone, and the marrow cavity may be obliterated. There may also be deposits of bone in the soft tissues round the joints. Specimens of such deposits or of affected bone obtained by biopsy have been examined, and the appearances vary with the stage at which the specimen is removed, sometimes showing active osteoblasts and normal haversian systems, and sometimes irregular ossification and the formation of dense bone. There is no completely satisfactory explanation; hypotheses have ranged from disturbance of the vasomotor mechanism of the nutrient artery to infection, endocrine disturbance, developmental defect and subperiosteal telangiectasis. Malignancy, tuberculosis and syphilis seem to play no part in any of the recorded cases. No fractures have been reported. Treatment has been symptomatic and X-ray therapy has been tried without success; surgical treatment does not seem to have been tried in any case and no autopsy findings are available. Many of the cases have been found in childhood, or are thought to have started in childhood, being discovered later during routine examination; and increasing numbers of cases are now being recognised. It is possible that a few cases may be discovered in recruits for the Services.

RESEARCH IN IRELAND

THE Medical Research Council of Ireland are somewhat hampered by lack of funds, but nevertheless have used their income of £5000 a year to provide their usual training grants, whole-time and part-time grants for research, and grants-in-aid. In conjunction with Prof. E. J. Conway, Mr. P. J. Boyle, M.Sc., has investigated potassium and electrolyte equilibria in muscle and in the isolated kidney; he has demonstrated that the proximal kidney tubule shows the permeabilities characteristic of muscle. He has also studied potassium equilibria in the yeast cell by a method depending on the displacement of the potassium by ammonium ion, and the same principle has been used by Mr. John Breen, Ph.D., to investigate possible changes in the potassium concentration in yeast. Mr. T. G. Brady, Ph.D., has prepared adenine deaminase in high concentration from calf's intestine. An inquiry of immediate practical interest is that of Dr. Einhart Kawerau into the concentration of ascorbic acid in natural foods in Ireland. Dr. Jame Deeny and Mr. G. L. Murdock, B.Sc., are studying the interrelation between immunity, infection and vitamin C concentration, and are also researching on polycythæmia. The serological studies of Prof. Hans Sachs have a topical application to methods of transfusion, and a reliable technique for blood grouping with higher concentrated sodium chloride solution has been recommended for general typing. He has also investigated peculiar blood samples, irregular iso-agglutinins and polyagglutinability, all of which have a bearing on the reactions which may follow homologous transfusions. Systematic examination of the pelvis has been made in a series of cases by Dr. S. J. Boland with a view to forecasting difficulties in childbirth. Dr. T. E. T. Bradshaw has been studying the excretion of œstrogens and related substances in adrenal disorders. Dr. J. D. H. Widdess is investigating the pathology of the hypothalamus in disease. The pathologists have been particularly lively, Prof. J. F. Donegan being engaged in research into the action of adrenaline on the frog's heart in relation to the production of energy and the storage of potassium. Dr. Oliver FitzGerald has studied problems associated with the presence of ammonia in the gastric juice, and with the diffusion of inulin through various tissues. Mr. M. G. A. Little, F.R.C.S.E., has been studying the effect of autonomic reflexes on the blood-pressure in the spinal animal and Dr. D. K. O'Donovan has gone on with his investigation of the metabolism of hypophysectomised frogs. Studies of the hyperventilation syndrome have been completed, and a new sign for the discovery of latent tetany has been described, based on the response to hyperventilation. In the fields of public health and bacteriology, Prof. J. W. Bigger and Mr. J. Havelock Nelson have found that talc, and some twenty other inorganic substances, make distilled water capable of supporting bacterial life. Miss Ethelwyn M. Mason, Ph.D., and her colleagues have continued to estimate the prevalence of goitre in Tipperary. Prof. R. A. Q.

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[1] Franklin, E. L. and Matheson, I. *Brit. J. Radiol.* 1942, 15, 185.

O'Meara has made a further study of diphtheria antitoxin during the year Other work supported by the council has been a study of the function of the acrosome in mammalian fertilisation by Prof J Brontë Gatenby, research by Dr J G Waugh into the microscopic and other changes produced by the action of sulphonamides and other drugs on eggs, and the investigation of a case of adrenal cortical hyperplasia by Dr L K Malley Some twenty papers have been published in scientific journals during the year The aid of the council has also been sought by the advisory committee on diarrhœa and enteritis established by the Minister for Local Government and Public Health These conditions have been made compulsorily notifiable since the outbreak reached its peak, in the summer of last year Dr J St L O'Dea, working under the Dublin medical officer of health, will study the clinical and sanitary aspects, and Dr S Sevitt will conduct a bacteriological inquiry into the cause of the condition at the school of pathology of Trinity College, working under Professor O'Meara

CAUSE OF DEATH IN ANURIA

SUPPRESSION of urine is one of the most harrowing and mystifying things a physician may be called on to treat He knows that unless the flow of urine can be re established the patient's life is a matter of days, but why is no urine formed ? What has happened to the renal blood-flow, to the glomerular blood-pressure and the filtration rate ? These are questions few would care to discuss, much less to answer Why does the patient die ? This again is a poser, but at least one can turn to experimental medicine for assistance Hoff, Smith and Winkler[1] have found that if the ureters are tied off or the kidneys removed in the dog there is a rise in the serum potassium from the breakdown of the animal's own tissues They believe that the cause of death is *cardiac arrest due to* potassium poisoning, and have produced reasonably good evidence in favour of this view by following the serum potassium and the electrocardiograms of all their animals They have also injected potassium into normal and anuric dogs and shown that death takes place not when the blood-urea rises to a great height but at or about a critical level of serum potassium , and they have shown also that the changes in the electrocardiograms at death are in all cases those of potassium poisoning There are, however, some unsatisfactory aspects of this theory Hoff and his colleagues admit that in mercuric chloride poisoning an accumulation of potassium is not the cause of death, and the same is true of clinical uræmia Moreover, they have ignored some stimulating work done on this subject more than ten years ago in Hungary Kerpel-Fronius and Leövey[2] came to the conclusion that the cause of death in anuria and uræmia was a rise in the general osmotic pressure of the body to a level incompatible with organised protoplasmic metabolism, and they substantiated their argument by showing that the administration of either sodium chloride or urea to anuric animals accelerated their demise This is an attractive theory, and there seems good reason for investigating the subject further

PAPWORTH

THE report for 1941 makes it clear that the Papworth Village Settlement is progressing in spite of war-time difficulties, and with Sir Reginald Wingate as chairman, Mr Peter Fraser as director, Dr Donald MacCallum as chief MO, and Miss K L Borne as lady superintendent, its future is in safe hands The social and economic implications of tuberculosis are well known—Farr, Newsholme, Hoffman, Biggs and others have repeatedly shown it to be a source of serious financial loss to the community in wage earning power and efficiency, besides bringing many of its victims to poverty or even destitution The triumphs of curative medicine in securing arrest of the disease too often prove Cadmean victories unless the sociological side of the case receives attention "The average consumptive leaves the sanatorium in a state which is little better than an equilibrium between attack and defence"[1] Such a patient is a damaged life He needs care and medical supervision for a long time especially *during the critical* five years following arrest of his disease Put into competition with healthy labour more often than not he breaks down under the strain, his old disease flares up and his last state is worse than the first Sir Pendrill Varrier-Jones coped with this aspect of the tuberculosis problem by the establishment of the Village Settlement and its industrial departments At the same time he provided treatment for all stages of tuberculosis He studied tuberculosis in the individual patient and based his study on clinical experience The treatment given at Papworth is adapted to the needs of the individual patient alike in the hospital ward, the sanatorium shelter or the workshop Varrier Jones realised the protean and fluctuating nature of tuberculosis This broad outlook is the secret of Papworth's success

BLOOD TO THE FEMORAL HEAD

THE management of fractures of the femoral neck is rapidly becoming standardised , in most clinics medial fractures and many of the lateral fractures are treated by the insertion of a Smith-Petersen pin supplemented in some cases by a bone graft The use of screws, multiple Kirschner wires or bone-grafts alone appeals to a minority but all agree on the necessity for accurate reduction and reconstruction of the femoral neck by an extra articular operation under radiographic control As the variable factor of mechanical accuracy approaches the ideal the end-results will come to depend more and more on the initial injury to the blood-supply of the head That success or failure in obtaining union after a careful operation is determined largely by this element of avascular necrosis has been emphasised by de las Casas,[2] who deprecates the use in all cases of the Smith-Peterson operation He concludes from injection studies that the ligamentum teres contributes little or nothing to the blood-supply of the head, most of whose vessels run medially from branches of the circumflex arteries The more medial the fracture the greater is the danger of complete severance of these branches, and if the fracture is nearer the head than the middle of the neck avascular necrosis becomes a strong probability In more lateral fractures the blood supply may be inadequate for union even if the head has survived, and many cases that do unite develop a severe degenerative arthritis as a late complication of necrosis For these reasons de las Casas does not attempt the reconstruction of medial fractures but excises the femoral head as primary treatment in all cases, adding an abduction osteotomy at the lesser trochanter whenever the patient's condition allows Lateral fractures are treated by bone-grafting except when the Smith-Petersen pin—which he thinks contributes to the danger of necrosis—is used , he reserves this as a rapid procedure for feeble patients

Many will consider these views on treatment of medial fractures both too sweeping and too pessimistic, for there is evidence[3] that, in good hands, the pinning operation secures bony union in about 70% of cases At a discussion on avascular necrosis at the Royal Society of Medicine[4] Watson-Jones said its incidence after the closed operation is only about 15%—though this is doubled when an open exposure involving capsular damage is employed—and that the insertion of the pin increases neither the frequency nor the severity of this complication Brailsford,[4] however, considers that the destructive changes in the hip-joint following necrosis are worse after pinning than with external splintage, since a false sense of security encourages too early weight-bearing The pin itself may cause added vascular damage Both agree that the relative density of the head which is the earliest radiographic sign may be masked by early functional activity which minimises the contrasting disuse rarefaction of the rest of the bone Recognition of avascular necrosis, which ought to be made at 6–8 weeks, may thus be delayed for many months, and it is important therefore to keep patients quiet in bed for 3 months after the operation This is probably of some positive value in preventing further injury to the blood-vessels of the neck during too early walking, when the pin is the only form of support

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[1] Hoff, H E Smith, P K and Winkler, A W *J clin Invest* 1941, 20, 607

[2] Kerpel Fronius E and Leövey F *Arch exp Path Pharmak* 1929, 144, 372 *Ibid* 1931, 159 236

[1] *Lancet* 1939 i 31

[2] De las Casas, H *J int Coll Surg* 1942, 5, 98

[3] See *Lancet* 1941, ii 316, 383

[4] See *Brit med J* 1942, i, 503

It is well to be reminded that there is a biological as well as a mechanical side to this problem, and no one will deny de las Casas's thesis that each of these fractures must be treated on its individual merits and not as just another opportunity for what may be a strikingly successful operation

THE RIDDLE OF ARTERIOSCLEROSIS

Is the problem of arteriosclerosis the modern equivalent of the age long search of the alchemist? Are we dealing here with that strange conundrum, the secret of senescence? Observations accumulate and refuse to fit into any coherent design, and perhaps we are still only at the stage when relevant material should be noted and filed for future reference The latest contribution to the subject comes from a large department-store in New York, where Lake, Pratt and Wright[1] have studied the incidence of arteriosclerosis and varicose veins in 536 employees of both sexes over 40 years of age They divided these into four occupational categories those sitting (e g, typists), those standing (e g, lift operators), those walking (e g, porters), and those climbing stairs (e g, delivery men—it seems that nearly 10% of the employees climbed stairs "most of the time") The lower limbs only were examined and conclusions were based on a history of pain on walking relieved by rest, inspection of rubor on dependence and pallor on elevation, palpation of the arteries and veins, oscillometric studies, and radiological examination of the soft tissues Many results were invalidated by the smallness of the subgroups, but a few are striking Thus the total incidence of arteriosclerosis was 35% (46% for men and 20% for women) and arteriosclerosis appeared to develop a decade later in women than in men Among the younger men (age 40–49) work which demanded stair climbing seemed to produce a significantly higher incidence of arteriosclerosis (38%) than sedentary or standing work (21%), but this difference did not apply to women The men had a much higher incidence of calcification in the arteries than the women, but the use of alcohol or tobacco could not be shown to have any correlation with the presence or degree of arteriosclerosis As might be expected, the incidence of arteriosclerosis was higher in hypertensives than in those with normal blood-pressure, though it is noteworthy that 63% of the men with hypertension had arteriosclerosis compared with only 28% of the hypertensive women The relation of varicose veins to arterial disease proved interesting, 73% of subjects over 60 years had varicose veins, taking all subjects, 67% of women who had never been pregnant had varicose veins compared with 41% of the men Women who stood or walked showed a much higher incidence of varicose veins than those who sat—a difference not found among the men In both sexes there was a higher incidence of arterial disease in those with varicose veins, but the correlation was not statistically significant in women, though it was in men The sex difference in the incidence of calcification of the arteries can be correlated with the observation of Ludden, Bruger and Wright[2] that in female rabbits fed with cholesterol the development of hypercholesterolæmia was inhibited, and the deposition of cholesterol in the aorta prevented, by the administration of testosterone propionate or œstradiol dipropionate, whereas in male rabbits no such inhibition was found This suggests that the relative infrequency of arteriosclerosis in women may be partly due to the presence of the ovarian hormone Tobacco and alcohol have once more been cleared of responsibility for arterial disease though without prejudice to the possibility of tobacco's vasospastic effect in patients with obliterative arterial disease

SAVED MILK AND SAFE MILK

CIRCULAR 2669 of the Ministry of Health is solely concerned with milk as a perishable food Its aim is to reduce loss of milk from souring or tainting and to safeguard the keeping quality of bulked market milk It proposes to do so by instituting a system of examinations of milk using certain standard tests These as far as practicable will be carried out in trade laboratories but under the control and supervision of the provincial dairy bacteriologists, who are already in existence These bacteriologists will arrange for frequent check tests to be made by their staff The actual tests to be used are not disclosed Three categories of producers' milk are proposed—"market" milk, satisfactory for the liquid milk market, "salvage" milk unsuitable for the liquid market, and "rejected" milk, to be returned to the farmer Salvage milk will be at the disposal of the Ministry of Food, who will whenever practicable arrange for its salvage, manufacture or disposal, and who will determine the price to be paid for it (If salvage is impracticable the milk will be returned to the producer) While the scheme will mainly be applied to depot or creamery bulked milk all supplies of milk, including designated milks, delivered from farms will be liable to test This scheme is however additional to existing regulations including those for designated milks, and the minister asks local authorities to maintain their work under these various orders and regulations The advisory work will be undertaken by the county war agricultural executive committees through their demonstration subcommittees The scheme involves price differentiation on a quality basis, prices being decided by the Ministry of Food in consultation with the Milk Marketing Board Milk legislation is already very complicated and this scheme adds to the burden already on the shoulders of the farmers and milk producers That it should be necessary is part of the penalty to be paid because Government departments have shirked handling the milk problem firmly Procedures have been adopted which do a little good at the expense of much administrative effort, but never go to the root of the problem The latest Government action is intended to conserve milk from becoming unsaleable, but leaves untouched the need for making it safe from the risk of spreading disease, in spite of urgent medical representations Much of the extra milk now allocated to young children and school children is just "milk," like Hamlet's father unanel'd, no reckoning made but sent with all its imperfections on its head Some part of the increase of human tuberculosis during the present war may turn out to be due to the greater consumption by children of milk infected with the bovine bacillus Where pasteurisation of milk for schools is impracticable it would probably be better to supply dried milk

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[1] Lake, M Pratt, G H and Wright, I S *J Amer med Ass* 1942, 119, 696

[2] Ludden, J B, Bruger, M and Wright I S *Arch Path* 1942, 33, 58

In England Now

A Running Commentary by Peripatetic Correspondents

WHETHER or not there is any alteration in medical practice after the war, I would advocate the compulsory holding of a DC—Diploma in Consultancy—for anyone proposing to take up consulting practice; before admission to the examination the candidate to be not less than thirty and to have had at least two years in general practice including contract work. My board of examiners would consist of three general practitioners to every one consultant, and two attempts only would be allowed. The examination, to be held not more than twice a year would entail first a half-hour paper, which would include the writing of two letters to doctors in proper style for hypothetical referred cases, marks to be given mainly for practicability of suggestions and questions such as "What would you say to (*a*) the patient and (*b*) the relatives if your findings were such and such?" The other part of the examination would be a pretty stiff viva, 25% at least of the marks to be given for general appearance, manner &c. "Relatives" would be interviewed, awkward prearranged questions by "patients" would have to be answered and a "talk about the case" would be made with one of the examiners acting as the GP. I haven't thought what I would do with the proceeds of the examination; perhaps if the fees were fairly high there would be enough to start a Consultants' Benevolent Association—run by GPs.

* * *

I saw a crap game in the tube today. The last time I saw one was in the Pullman wash-room during a wearisome journey on a public holiday from New York to one of the Canadian cities. The train started soon after breakfast and arrived sometime the same night; I don't know quite when for I was not allowed to be present. Although the United States was our ally, British subjects not resident in the Western Hemisphere were classed as aliens and treated as such. Regulations required that travel papers should be handed to officials who are responsible for advising the immigration officer if the said alien wants to leave the country. With the full assurance that everything was in order I started off for Canada. The snow got deeper, the daylight faded, the passengers left one by one and for many miles only a few remained. The tedium was relieved somewhat by the intelligent conversation of the coloured porter in the car. He was not the only man I met in the United States who seemed quite unaware of the real conditions in England in war-time and the sacrifices demanded of, and willingly submitted to, by our general population. The supposedly intelligentsia were amazed to hear in detail about things we regard as commonplace—rationing, taxation, and how John Citizen spends his day. It is comforting to know that steps have been taken to promote a better understanding in the United States of the British outlook today. Canada is of course, as war minded as we are, anyway in the Eastern Provinces.

The train stopped at the frontier. A squad of Customs and Immigration men descended on me. The Customs, observing my nationality, made their examination the merest gesture, I suppose so that they could give pride of place to Immigration. Immigration was very fierce as I deferentially handed over such identification papers as I still possessed. The man seemed rather undecided about me, so I explained that additional papers should be in his possession, and actually he had to my knowledge been officially advised that I wanted to cross the frontier. Other officials now joined my questioner and after a brief consultation they announced that I must accompany them for inquiries. Despite the fact that there would be no further train for 24 hours I was neatly assisted from this one realising that I was more or less under arrest on suspicion. Traditional English teaching is to "come quietly" which I did feeling that it was wiser to accept the inevitable gracefully. One interest of life is to appreciate skill in others. The polite firmness with which I was escorted through the darkness across the station yard and right into a waiting car was unexceptional and a breakaway would have been impossible. There was a drive of about a mile to the frontier post opposite the entrance of which the car drew up so that its door opened against one side of the entrance while the open side was filled by a man who emerged from within. "I see you've got someone," he said to my guardian. Evidently a catch relieved the monotony of frontier life particularly on Christmas night when business was slack.

After further questioning and scrutiny of my papers it was announced that as immigration headquarters had not yet notified the frontier of my existence I should have to wait until the next day, if not longer, till the business was regularised. I explained that I was not travelling for my health and that I was due for important meetings the next day. Later one friend whom I spoke to on the telephone and with whom I had an appointment offered to journey through the night to identify me. His offer had to be refused because nothing short of strict compliance with regulations seemed to be of any avail. A little disquiet was now softening the general attitude to me, and as a concession I was told that I could spend the night at the inn if I preferred this to a wooden bench in the frontier post, so I was driven in a taxi to a nearby village where I checked in at the local. This establishment was run by a French Canadian who took the circumstances of my arrival as a matter of course; he did a regular trade with people stranded like myself. We conversed in both English and French but I realised then and subsequently in that region that the French they speak differs materially from that spoken in Europe not so much in the words perhaps but in their pronunciation. After being allotted a pleasant little room, even in this outlandish spot fitted with running water and other refinements, I adjourned to the bar, there being nothing else to do. The landlord had already announced that there was someone from London around so conversation and questions soon started. I was the second European within a few days to be stopped. It was easy to recognise who the other man had been—a Frenchman I had met on various previous occasions. He must have created an all-time record by his journeys in Europe and across to and into the United States with only a sheet of notepaper for credentials yet he met his match here, far removed from war or thoughts thereof.

A special brew of the pub was a rum punch called Tom and Jerry. The recipe and name, I was told, came from Huntingdonshire England where it was said to be a special Christmas brew. It had been introduced to these parts by the early settlers. So far I have had no chance to check its history, but I can testify to its soothing qualities in time of trouble. I was rescued next morning.

* * *

When I was a student like many another I grappled with Cut and Comeagain's Manual—one might almost say Bimanual—of Surgery. I had to transpose C and C's formal diction into a picture except when they provided one for me, and then I had to reduce that picture to words of my own more simple vocabulary. All this in order that I might be able to answer the examiners' questions clearly and to the point but above all and everything to answer the questions. Ten years later when I was surgeon on a steamer I was sent for by a passenger in one of the cabins de luxe and found he was none other than the great Comeagain himself, retired and on a world tour. For some weeks I felt myself one of the elect in that I was treating this great man, who was kindness itself to me and told me many anecdotes, some of them even derogatory of Cut. It was as though while out for a country walk one happened to climb Mt Olympus and running into Zeus was not only asked to prescribe for him but also was regaled with pleasantries, "Have you heard this one about Apollo?" The conceit engendered by this lofty association must be my excuse for daring to criticise the interim report of the BMA Medical Planning Commission on a fundamental point. Before we have read six lines what an amazing thing do we discover! The terms of reference, the very charter of the commission's existence, says that they are "to study", not a word about suggesting or planning just to "study war-time developments and their effects on the country's medical services both present and future." Though how in the name of Heaven one can study future events I don't know. Speculate about yes, but then they are not licensed to speculate, only to study. This foundation-stone sentence is certainly a flimsy basis for changing the whole structure of British medicine. It is like getting an order from the coroner to perform a necropsy, and going on to hold the inquest oneself, arrange the funeral, and then issue a majority report in favour of "Nearer my God to Thee" on the tombstone, while the minority favours "Peace perfect Peace." Blue pencil, please.

* * *

He has one of those lean, immobile faces the expression on which seems to say "Go on. Impress *me*. Make *me* laugh—if you can." When he looks up or down or sideways he appears not to move his head at all but his eyes, restless and steely-blue, miss nothing. By occupation he is a doctor's man of all work and this involves a good deal of rabbiting and the care and management of shooting dogs which he trains himself. His present dog is a sound worker, obedient and devoted to a master no less devoted to him though sparing of caresses or praise; indeed, in conversation he usually refers to the dog as "that black beggar"—especially when the dog very sensibly jibs at working out some particularly thick and uninviting briar-patch through which his master stoically plods his way beating and stabbing with his long stick. Seeing him one day stand stock still with head slightly bowed I guessed that he must be looking upward at something, so I worked my way round him till I could see his eyes. Following the direction of his gaze I saw it was riveted on a crow's nest fixed in a fork near the top of a tall oak. To those with a gamekeeper's outlook on life crows are anathema. "There's mebbe a brood o' young 'uns there," he observed and, without more ado, strode across and began to climb the tree as nimbly as a cat. In a matter of seconds he had reached the nest and reported it empty but on general principles he overturned it before climbing down. I congratulated him upon his agility but he made nothing of it. "'Tis all 'coordin' to what you'm used to," he said. I only hope that I shall be able to climb half as well when I'm 62.

* * *

Morale is most important in a hospital ward, and it has always puzzled me why it varies from time to time and from place to place. No doubt the mumbo-jumbo men know the real explanation, but the simple-minded surgeon must look for simple explanations. Everything in this hospital is done by orderlies, who before the war were anything from clerks to coalminers, but now, clothed in masks (see MRC War Memo No. 6) and armed with forceps, maintain a terrifyingly inaccurate but so far successful asepsis in the wards. They are keen and cheerful—they organise a football team, a dance band, and a concert party. The last is my great rival and I often have to remind men and even colleagues that we are a hospital and not an academy of concert-party art. But I am not hostile; I go to their performances and await with horror the man who has sung the same sentimental song ever since the war started; and I revive the thrills of a child at the circus when we come to the strong man and acrobat turn. These wonderful men seem able to do anything; especially do I like Private X who solemnly turns somersaults across the stage holding the *Times* in his hands and pretending to read it. Last night I was chatting to the night sister. "Yes," she said, "I heard all the patients shouting early this morning, so I rushed into the ward. I had sent Private X to do a fomentation at the end of the ward. He was holding the foment in his hands and doing somersaults down the ward as fast as he could and everyone was sitting up in bed cheering him." I laughed. "But," she cried, "what's the use of his wearing a mask and gown if he does that?" But the morale is good in that ward.

* * *

I was asked to help clear out the medicine cupboard of an aunt recently dead. She had been an old lady of meticulous habits and everything was neatly labelled. On one bottle, lest there should be any possible mistake, she had carefully printed, "Cascara, I think."

* * *

We were on a ward-round with a number of GPs, and the patient had either ascites or an enormous cyst. Two of them began conferring; eager to anticipate a question, I edged across in time for the last sentence. "Yes, my goodness," said one of them, with more interest in the patient's household arrangements than I could readily countenance, "*she'd* fill her bath."

MEDICINE AND THE LAW

Procaine and Percaine

A RECENT inquest at Banbury revealed a dispenser's mistake. She received a written slip from the theatre sister asking for one gramme of procaine. Thinking procaine and 'Percaine' to be similar substances, she used crystals from a bottle of percaine and labelled the solution "procaine." Giving evidence before the coroner, she said that she had heard of percaine but had never dealt with it in the pure drug form; she was so convinced that procaine and percaine were identical that she did not consult any book.

The patient had been admitted to hospital after an accident; his chest was crushed and skin-grafting was necessary. For the third of these treatments, four months after the accident, the surgeon decided to use a 5% solution of procaine as a local anæsthetic and asked the sister for this. The operation was finished by 3.15 P.M., but the patient almost immediately had a convulsion and followed it with six more in the next quarter of an hour; he was dead before 4 o'clock. Dr. Alastair Robb-Smith, of the Radcliffe Infirmary, Oxford, conducting a post-mortem examination, found death was due to heart-failure and shock. The solution in the bottle, on being analysed, was found to be a solution of percaine. The witness explained that the normal maximum dose of procaine was two grammes; the surgeon had injected 1.25 grammes, a perfectly safe dose if the substance had been procaine. Percaine had a quite different action, more powerful in its anæsthetic properties and more toxic; the safe dose for an adult was reckoned as 0.12 gramme. The patient had been given ten times the maximum dose; this was the immediate cause of death. Dr. Robb-Smith said it was unfortunate that names so similar as percaine and procaine should be employed.

Shock due to Noise

To be negligent is to take the chance of having to pay damages to anyone who suffers injury in consequence. If a negligent motorist (the negligence which occupies the judges' attention is usually negligence in the use of a motor vehicle) breaks a pedestrian's leg, the case is easy. If the injury takes the form of nervous shock, if there has been no physical impact but merely the apprehension of an impending or immediate accident, there may be a question whether the damage is not too remote to be actionable—whether, in fact, the motorist could reasonably have foreseen this particular consequence and his want of care. In Bourhill *v.* Young the House of Lords has lately decided an interesting case of this kind. The plaintiff suffered from shock merely through hearing the squeal of the brakes and the crash of the colliding vehicles in the distance.

Mrs. Bourhill, explained Lord Thankerton, was a fishwife who was travelling on a tramcar near Edinburgh on Oct. 11, 1938. The tram stopped at a stopping place just short of a crossroad. She alighted and went round the near side of the tram to lift her fish-basket from the off-side of the driver's platform. A motor cyclist, travelling at an excessive speed, was going in the same direction as the tram; he collided with a motor car at the crossroads, was thrown on to the roadway and received fatal injuries. Mrs. Bourhill neither saw nor heard the cyclist previously; she knew nothing of him until she heard the sound of the crash when the vehicles collided. At that moment she had her back to the driver's platform and the driver was helping her to get the basket on to her back and the broad leather strap on to her forehead. The scene of the collision was about 45–50 feet away from her. After the motorcyclist's body had been removed, she approached and saw the blood left on the road. Her case was that as the result of the collision she wrenched and injured her back, was terrified and suffered severe shock; she was about 8 months pregnant and gave birth to a child on Nov. 18 which was stillborn, she alleged, as the consequence of her injuries. The trial judge took the view that the noise of the accident caused a nervous shock but that she had not proved that the stillbirth or the injury to her back resulted from the shock or her immediate reaction to fright due to the noise. The shock disabled her from carrying on her business for a time; there was thus a sufficient finding to raise the question of the dead motorcyclist's liability The problem was the extent of the latter's duty towards other passengers on the road Clearly he must ride with such reasonable care as would avoid the risk of hurting anybody whom he could reasonably suppose likely to be injured by his failure to use reasonable care It is settled law that the injury may include injury by shock without physical impact or lesion There must, thought Lord Thankerton, be an area of potential danger which the cyclist ought reasonably to contemplate as likely to exist in consequence of his negligence Was Mrs Bourhill within that area? Lord Thankerton was clearly of opinion that she was not

Previous leading cases have arisen out of some carelessness in the control of a motor vehicle A lorry-driver leaves his lorry imperfectly braked and unattended at the top of a hill It starts off downwards and a mother, seeing the uncontrollable monster gathering pace, suffers shock from fear for her child who, she thinks, is playing in the road below But in the Bourhill case the motorcyclist had his cycle under control, though he was exceeding the proper speed Did he owe Mrs Bourhill any duty? She was not within his range of vision, the tram obstructed any view of her, he was well past the tram when the accident occurred Ought he to have thought that his machine might ricochet and hit her or that falling glass might strike her? Lord Thankerton thinks the motorcyclist need not have imagined any such contingency Mrs Bourhill based her claim merely on sound, not on apprehension of an impending collision The volume of noise afforded no ground for argument A plaintiff claiming damages for negligence must establish some breach of duty on the defendant's part Mrs Bourhill failed to do so She therefore lost her case, and the trend of judicial decisions (which had been favourable to plaintiffs in these cases of shock) for the moment suffers a setback

CUTTING DOWN QUININE

In March of this year the Ministry of Supply announced that supplies of quinine in Great Britain were adequate and would last for some time, and that steps were being taken to ensure that sufficient stocks would be available for the next year or two Most of the world's supplies come from Java, however, and it has now become necessary to husband our stocks rigidly so that malarial patients can have first call on them Under his emergency powers the minister has arranged that, from Aug 13 onwards, cinchona, cinchona products and synthetic substitutes will be controlled The controlled material thus includes any bark (whether whole, ground or crushed, or in any other form) from any variety of *cinchona* and any preparation made from it, any alkaloid derived from such bark, and any "salt of any alkaloid, any totaquina or quinetum, any mixture of cinchona alkaloids, any cinchona febrifuge, or any synthetic product or material which according to current medical opinion is a specific for malaria The controlled materials will only be supplied to the following anyone holding a medical prescription for a quinine preparation, any hospital authority, retail pharmacist or doctor, provided he keeps within a fixed limit (calculated as quinine, 25 oz), any patient holding a medical certificate or a document from a Government department stating that he has, or has had, malaria, anyone requiring it for use as part of the medical stores of a ship, any Government department, and anyone authorised to obtain material on behalf of the Minister of Supply Doctors are at liberty to write prescriptions containing quinine for any patient, whether malarial or not, whom they consider needs it, but since it is essential for the treatment of malaria, the minister is confident that doctors will not order it for colds or other ailments which can be treated with alternative remedies Quinine has also been withdrawn from many preparations, proprietary and other, in which it was previously used For some time it has been left out of tonic water and quinine drinks and it has already been omitted from Easton's syrup All holders of stock containing 25 oz or more of quinine must notify the Director of Medical Supplies, Ministry of Supply, Portland House, Tothill Street, London, S W 1 Copies of the order may be obtained

Continued at foot of next column

Letters to the Editor

DIPHTHERIA IN INOCULATED PERSONS

SIR,—Dr Glover and Professor Wright, in their analysis of the results of diphtheria immunisation in Liverpool, say that "the response of the people of this city to the offer of inoculation free of cost has been most disappointing" Their disappointment must be shared by doctors all over the country If, however one compares the meagre insignificance of the propaganda on behalf of diphtheria immunisation with the prominent and ubiquitous boosting of So and So's infallible remedy for such and such one realises why the "offer" of free immunisation often never reaches, or at least fails to impress the public Must the arts of propaganda be used solely to boost worthless placebos for the profit of their manufacturers or would it be justifiable to use these well-tried methods for the public good? Better publicity is one necessity, another is ready availability The striking difference in incidence of immunisation among school-children and among preschool children (31% and 6% in the paper quoted) is no doubt due to the fact that arrangements are often made in schools for the inoculation of its pupils, whereas the mother herself is responsible for taking her younger children to a clinic, which may be some way off, up to five times (the actual number of attendances differs in the various clinics) Finally, many doctors themselves are indifferent to the matter If every doctor, nurse, health visitor and welfare worker impressed on every parent with whom they had professional and social contact the urgent necessity of diphtheria immunisation it might in time become a social disgrace to have a child known to be unprotected against this deadly disease

West Middlesex County Hospital   PATRIA GAIRDNER

TUBERCULOSIS IN NURSES

SIR,—I should like to comment on two points in your correspondent's report from the press gallery (*Lancet*, Aug 8, p 172) In regard to the shortage of nurses, is it not time that the state made some provision for those nurses unfortunate enough to contract tuberculosis in the performance of their duties? Here are two examples of what may now become of them

A state registered nurse contracted tuberculosis while nursing in a well known chest hospital some 9 years ago She went to a sanatorium for treatment and after some time was put on the nursing staff She crocked regularly each year, and 2 years ago she was told that she would never work again The medical superintendent of the sanatorium was kind enough to say that she might make her home there for the rest of her life Her only money is 2*s* a week total disablement benefit This is all she has to provide herself with luxuries and necessities—even clothing

Another contracted this disease in a general hospital at the age of 21 or 22 She also went to a sanatorium, and 4–5 years ago was told that she could not work again She accepted the offer to stay on at the sanatorium for life, and her only income was 3*s* 6*d* a week total disablement benefit She was really entitled to 6*s* but 2*s* 6*d* had to be allowed to accumulate because she was in a hospital (see Ministry of Health Leaflet No 35, 1938) The fact that she would never leave the sanatorium alive made no difference to her approved society After her death I saw an advertisement stating that there was an estate of £25, and asking for next of kin to claim it This money, had it been paid to her, would have made her life a little easier

Knowing of these cases, and many others, I feel it unjust to direct nurses lightly into this work, which may

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Continued from previous colomn

from H M Stationery Office It is encouraging to know that thanks to the enterprise of an American officer, a quantity of cinchona seed has been safely brought from the Philippines A correspondent in the *Times* of Aug 15 recalls that Lieut -Colonel A F Fischer, who was chief of the Philippine Forestry Service for a long time, introduced the cinchona plant to those islands During the defence of Bataan and Corregidor he supplied quinine to the troops, and when the situation became critical he flew to Australia with large supplies of selected seed after all, end in the plight outlined above I am not suggesting that the risk of infection is great—it is certainly no greater working in a sanatorium than in the tuberculosis ward of a general hospital—but it does exist and it is time some financial protection was offered to nurses undertaking this work It is ridiculous to compare them to fighting men who, if incapacitated, do at least get some pension

It is lamentably true that " the rehabilitation of the tuberculous patient has not been sufficiently provided for in the past " and it is to be hoped that " the maintenance and subsidising of tuberculous patients from the time they leave the sanatorium till they return to full employment " may become so at some *early* future date When a patient leaves a sanatorium, invariably not yet fit for work, if he has no home he must apply for public assistance I doubt if it is generally known what rudeness *and cruelty is meted out to such patients, even* when they have a letter from the almoner of the hospital where they are having treatment Most relieving officers are clearly ill-fitted to discharge this duty

A girl who applied for relief with such a letter was asked by the committee what money she had in her bag On saying that she had 5*s* she was told that she must apply when she was destitute The 5*s* had been loaned to her and she was in fact, penniless After an unpleasant scene during which she was told that it was her duty to get well as soon as possible and not be a drain on the community, she was allowed 25*s* a week, out of which she had to buy 2 pints of milk a day if she followed the advice of the hospital The sum was paid but the manner in which she was treated was so unpleasant that she returned to her lodgings with a temperature of 100° F saying that she would rather work and die than remain on PA In fact, she crocked again within 6 weeks or so and returned to hospital, costing the state a good deal more than 25*s*

I feel this sort of thing should be brought to the attention of the medical world

Harrow E D ANDREWS

THE MILK FACTOR IN CANCER

SIR,—Few indeed must be the themes in biology and medicine which have entirely escaped discussion in the older records, even—perhaps usually—when evidence was scanty or lacking Sir Alfred Webb-Johnson's letter in your issue of Aug 8 shows that the milk factor in the transmission of disease of sucklings is no exception, since the subject had occupied the attention of philosophers from very early times More specific conjectures, relating to a milk factor in the transmission of cancer-susceptibility, appear however to be rare, so that the following may be of interest (F -J -Leon Rouzet, *Recherches et observations sur le cancer*, Paris, 1818, pp 317–8)

" L'héredite du cancer une fois reconnue, on voit de quelle importance il est de remettre l'enfant nouveau né a une nourrice etrangere, lorsque la mere a presente, soit avant, soit pendant la grossesse, quelques symptômes cancereux, puisqu'il n'est guere douteux qu'elle ne communiquât a son nourrisson en l'allaitant cette disposition au cancer a laquelle il avait peut-etre echappe pendant l'epoque de la gestation "

On the same subject Rouzet also refers the reader to Portal (*Maladies héreditaires*, p 74 et seq , and to Petit's article in the *Dictionnaire des sciences medicales*

London, S W 3 ALEXANDER HADDOW

SUBLINGUAL THERAPY IN ADDISON'S DISEASE

SIR,—Having read Dr Andrew Wilson's article of June 27 with much interest I would like to quote one case in which we tried sublingual therapy

A tractor driver, aged 17, working on a farm, was admitted to hospital on Jan 16 complaining of anorexia and vomiting He had been well until 2 weeks previously when his symptoms developed rapidly with well marked lassitude, but no shivering, gain or cough, and no headache or giddiness On admission he was extremely apathetic and drowsy, and was deeply pigmented a homogeneous brown, especially on hands, face, axillary folds and nipples BP 60/45 mm Hg The condition of his mouth was very bad and there was much pus on the tonsils He was treated with 'Eucortone' 10 c cm t d s intramuscularly and rectal saline when the vomiting was most severe By Feb 10 there was considerable improvement with no further vomiting and pigmentation, drowsiness was definitely less His BP was now 96/64 mm Hg The eucortone therapy was then altered to 'Doca' 7 5 mg daily intramuscularly On Feb 23 his general condition was further improved, BP 105/64 Additional salt (15 g daily) was being added to his normal diet Doca sublingual tablets were then substituted, and he was given one 2 5 mg tablet five times daily (12 5 mg daily) He was instructed to keep the tablet under the tongue until it was fully dissolved—not to suck it During the next week he developed an obstinate stye of his right eye He became a little more drowsy and the pigmentation became rather more definite, doca 5 mg daily by intramuscular injection was therefore given in addition to the tablets Very soon there was an improvement and by March 18, when the stock of tablets was temporarily exhausted, his BP had reached 122/86 The patient had put on weight and was feeling very well, though he was still kept in bed For 6 days, the doca intramuscular injection were cut down to 5 mg on alternate days but almost at once there was a change, with the onset of sore throat and pyrexia The injections were then made daily but by March 29 the BP had fallen to 96/64, temp 101° F There was more pigmentation, much nasal secretion and severe asthenia The injections were increased to 10 mg daily, with a rapid response in the general condition This dosage was maintained and the subsequent improvement was steady By April 23 (3 weeks later) the BP was 132/80 The patient was again putting on weight and the pigmentation was beginning to fade He was then allowed to get up, this was not accompanied by any ill effects while there was no obvious weakness With a further supply of doca sublingual tablets, a second course was begun on May 7 and for 3 weeks the patient was given twice the previous dose (5 mg q d s) There was no obvious change but at the end of the 3 weeks he had definitely relapsed a little—BP 100/76, with the pigmentation more definite and greater asthenia He became obviously more apathetic and drowsy An additional 5 mg of doca was then given by injection daily with rapid improvement The tablets were discontinued on June 6 and a further 5 mg injection substituted On this dosage (10 mg daily), as had been proved before, the patient remained very well, BP 120/85 *When discharged on June 17 he had put* on weight and the pigmentation was a good deal paler He was able to live a quiet life without any obvious tiredness At no *time during the treatment was there any* œdema Incidently, the pathology of the constitution was almost certainly tuberculous as an X ray of the chest revealed some soft infiltration of both lungs, with a slight opacity above the right renal shadow

From these two courses of sublingual doca it seems that at least 20–30 mg daily would have been necessary for maintenance, compared with the simpler 10 mg injection

My thanks are due to Dr H S Morley for permission to publish the case and to Messrs Organon Laboratories for providing the doca in sublingual tablets

M P HUTCHINSON

Royal West Sussex Hospital, Chichester

DIGESTIBILITY OF WHEATMEAL

SIR,—Dr Wright does not seem to have taken much notice of the devastating criticism which his first article has aroused (Bacharach, A L *Chem and Ind* 1941, 60, 791 Fraenkel, G *Ibid*, 1942, 61, 84 Lester Smith E *Ibid*, 1941, 60, 695), and still maintains that a switch over from 75% to 85% extraction seriously upsets the balance sheet of the national diet It is of course true, as has been officially stated, that higher extraction results in a loss of wheatfeed and consequently a reduction in milk production But it *also saves* annually *some 700,000 tons of wheat imports* if the same quantity of flour is milled in both cases In more normal times this shipping space can still be used for importing feeding stuffs and the cattle then receive just as much under a brown as under a white bread policy It is, therefore, not the brown bread policy as such which deprives the cattle of their food but the necessity of saving shipping space If this shipping space must be saved and white bread is to continue, there must be a reduction of about 12% in the bread eaten It seems hardly likely that Dr Wright or anybody else would recommend this latter procedure which would represent a much more serious loss of calories and of protein than that which adoption of wheatmeal bread is causing Therefore, with the present shipping position, the wheatmeal bread policy is in every important respect—protein, calories and vitamins—a far superior solution If there were no shipping difficulties we would have the dietary advantages of wheatmeal bread without losing a pint of milk Even if Dr Wright's claims on digestibility of National Wheatmeal were right, which seems doubtful, the loss of protein under such a scheme would be almost negligible (4000 tons p a), as I pointed out elsewhere, and there would be no loss of calories

Imperial College of Science and Technology G FRAENKEL

AIR ENTRY THROUGH TRANSFUSION SETS

SIR,—In his article of Aug 8 Mr Devas throws an interesting light on the possible results of air leaks but he makes no mention of their commonest cause It often happens that a patient having a transfusion of saline or blood suddenly requires the immediate intravenous administration of some drug such as '*Coramine*' The quickest and most convenient method of doing this is, of course, to inject the drug into the tubing of the transfusion set with a hypodermic syringe Unfortunately, this is only too often the cause of a permanent air leak This sabotage of the transfusion set is permissible where the patient's condition calls for instant interference but even in these cases the less damage done to the set the better I suggest that it should be a firm rule in every hospital where the standard sets are in use that this "needling" of the tubing should only be allowed in the six-inch length immediately proximal to the cannula This length is usually joined to the rest of the tubing by a glass connexion If replacement becomes necessary, it can then be made with far greater economy of rubber than if the damage is in other parts of the set, and, at the same time, location of air leaks is simplified

St Bartholomew's Hospital, E C 1 ROBERT J EVANS

TREATMENT OF RECENT WAR WOUNDS

SIR,—In a letter in the *Lancet* of July 4 I expressed my opinion that the training of Army surgeons in wound treatment had been and was still inadequate It was not, of course, my intention to imply that there was no training of this type I have since been told on very high authority that everything possible is being done in the way of training Army surgeons in wound treatment both in theory and its practical applications at home and abroad

Oxford J C SCOTT

CHALK IN BREAD

SIR,—In his letter of Aug 1 (p 139) Lord Horder says he supported the calcium-in-bread scheme because of the deficiency of calcium in our war-time diet In a review of the subject at the Royal Society of Medicine (*Brit med J* June 13, 1942, p 731) McCance said "Certain studies of the calcium intake in representative groups of people, adults and children, showed it to be much about the same as before the war" Widdowson and Alington, in their survey of middle-class diets (*Lancet*, 1941, ii, 361), found that the average daily intake of calcium increased from 0 63 g in 1935 to 0 77 g in 1941 In a Parliamentary reply (*Ibid*, July 25, 1942, p 110) we have lately been told that the total sales of milk for liquid consumption in the United Kingdom in 1939, 1940 and 1941 were 863 million, 937 million and 1065 million gallons Finally, we need only look at the cheese ration even before the present increase to know that Lord Horder's statement is unfounded

Liverpool I HARRIS

VESTED INTERESTS

SIR,—In connexion with a state medical service it is being stated that the "goodwill" of a medical practice is a vested interest, and by some that this is in the sickness of patients The latter is obviously ridiculous The professional ability and the personality of the doctor mainly constitute the goodwill of the practice These he cannot transfer to any purchaser, they are thus not saleable What money may have been spent on his education by his parents does not constitute any part of goodwill or vested interest, consequently this has no price The only vested interests so far as private practice (without NHI) is involved are the money spent on the doctor's house, instruments, &c These all have a price Doctors among themselves have instituted a pernicious custom of buying and selling practices and thus supporting medical agencies, but that is purely a matter for themselves and not one they have any right to ask the public to pay for When we come to the National Health Insurance practices there is a different factor The Government have definitely in their regulations recognised the transfer and sale of "panel" practices, and where doctors have had to pay for such portions of their practice they have a right to compensation if they do not continue in such practice because of Government action

W A G

PRACTITIONER AND PATHOLOGIST

SIR,—The application of laboratory methods to clinical medicine—in other words the practice of clinical pathology—demands, as you point out in your leading article of Aug 15, the combination of a sound knowledge of laboratory technique and clinical medicine From this it follows that clinical pathology can only properly be practised by those in close and continuing touch with clinical medicine, in laboratories forming an integral part of active hospitals Divorce of this work from hospitals and its centralisation in laboratories, whether publicly or privately owned, must inevitably result in the perpetuation of just those errors and abuses which you deplore It is disappointing to gain the impression that you are unaware of the great development of clinical pathology in many provincial hospitals in the past twenty years Actually there are now few parts of England where the services of a properly staffed department of clinical pathology are not made available through the principal hospitals of the area In most of these the facilities which you demand for consultation between practitioner and clinical pathologist are provided That the same cannot be said of Scotland is due to that centralisation of this class of work which you seem to approve

Clinical pathological services would be even more generally available throughout England if medical students in the past had been encouraged to interest themselves in this special branch of medicine Sojourn in the pathological laboratories of a hospital, no matter how well equipped, will not by itself make a clinical pathologist Clinical pathology is something more than "hospital pathology" it demands a training which will make the clinical pathologist as much at home at the bedside as at the laboratory bench

Wolverhampton S C DYKE

BABEL IN ENDOCRINOLOGY

SIR,—There has recently been introduced into clinical medicine a substance which has a progestational action when taken by mouth It is chemically known as anhydrohydroxyprogesterone, pregneninolone, or ethinyltestosterone It is sold by various manufacturers as 'Lutocyclin Oral,' 'Progestoral,' 'Lutogyl,' 'Proluton C,' and, for all I know, under another half-dozen names Now the GMC has decided that it should be called ethisterone, thus making confusion worse confounded There was no need of a new name, still less of a name which draws attention to the chemical relationship of the substance to testosterone (which is of no practical importance) instead of to progesterone (which is) Why should not the "approved name" be anhydrohydroxyprogesterone ?

If these new and often very useful remedies are to come into general use, something must be done about nomenclature Œstradiol benzoate has at least a dozen trade names Insulin has only one The first reliable manufacturer to market his products as œstrone (Smith), progesterone (Smith) and so on through the whole range of hormones will receive the unswerving support of this clinic, and, I think, of the whole profession Meanwhile, would the GMC think again, please ?

Endocrine Clinic Westminster Hospital RAYMOND GREENE

IN Dr Paramore's letter of Aug 8 (p 171) read "When renal failure has developed, the best posture is the semi prone with the feet somewhat raised "

Obituary

RONALD STEWART

M B EDIN ; SURGEON LIEUTENANT R N V R

THE parents of Surgeon Lieutenant Ronald Stewart, who lost his life on active service last December, have been informed that their son has been mentioned in despatches for his devotion to duty as one of a rescue party sent to the help of a bombed ship, when he worked for many hours to relieve the sufferings of the survivors and did much to aid their recovery Stewart was educated at Edinburgh Academy and Edinburgh University where he graduated in 1940 when he was still only 21 After a few locums he was appointed house-surgeon at Leith Hospital, but he had already volunteered for the RNVR and in April, 1941, received his commission, in due course he was appointed to HMS *Audacity* Ronald Stewart was a farmer's son He loved the countryside, its people and its sports He could cast a pretty fly and was something of an expert on the bird-life of Midlothian, having made several expeditions to the Isle of May to study the migrations His happy personality charmed all who met him, and his sincerity, kindness and wit won him many friends

A Hutcheson & Son Colinton

WILLIAM ELLIOT YOUNG

B M OXFD ; CAPTAIN R A M C

Captain W E Young, only son of Sir Alban Young, was killed in action in Libya in May William Elliot Young, who was born in 1910, was educated at Marlborough and Balliol College, Oxford He went on to Guy's for his clinical years and qualified LMSSA in 1937, taking his degree the following year While a resident at Guy's he met Miss Mary Macdonald, daughter of the Rev J Macdonald, who was a nurse at the hospital. They were married at the outbreak of war and Dr Young immediately volunteered for the RAMC He was called up a few months later and in January, 1940, sailed for India He accompanied the Indian division to Eritrea the same year and at the end of that campaign was sent to Libya His widow is still in India with their one son

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Lieut -Colonel AILWYN HERBERT CLARKE, RAMC, died on June 23 in a prisoner-of-war camp in Italy at the age of 59 At the beginning of the last war he served in France as a Red Cross dresser but eventually returned to finish his medical studies at St Thomas's As soon as he qualified MRCS in 1916 he took a commission in the RAMC and went back to France in October He was awarded the MC for conspicuous gallantry and devotion to duty on Oct 10, 1918, when under heavy shelling he proceeded several times to the sunken road south-east of Rambourlieux Farm near Le Cateau to attend to wounded. He did not desist until he had succeeded in dressing all his patients and in getting them carried safely away During the present war Clarke served in the Middle East from June, 1940, till he was captured in April of the next year He held the temporary rank of lieut -colonel

DR. DAWTREY DREWITT —Sir Walter Langdon-Brown writes . Sir William Hale-White's beautiful little tribute reminds one of another trait in Dr Drewitt's delightful character—the blend of old-fashioned courtesy with a youthful eagerness to know of any new thing Some of us used to tell him that as he was born in leap year on Feb 29 he only aged one year in every four At 92 he was still a welcome and interested participant at his dining clubs With his many interests it must have grieved him to say, as he did in his last letter to me on May 16, " I know nothing of the world beyond my bedroom "

Public Health

Iceland

FROM an English summary of the 1939 public health report of Iceland we learn that the population of that island was 120,264 , its birth-rate 19 4 , death rate 9 7, a low record , infantile mortality 37 3 (in 1938 it was 28 3, a low record) , maternal mortality 2·1 , and that 87 8% of the babies are fully breast-fed The disease statistics given for the ten years 1930-39 include many conditions for which morbidity returns are rarely available Thus, in the ten years there were 51,764 notifications of tonsillitis, but only 4 deaths are attributed to this cause ; the attack-rate works out at about 1 person in 20 per annum, or one attack per 20 years of life Of respiratory catarrh there were 115,731 notifications with 22 deaths , this works out at one attack per 10 persons per annum Of influenza 55,165 notifications are recorded but only 190 deaths The annual variation of numbers in tonsillitis was between 3909 and 6713 ; in respiratory catarrh between 8549 and 16,938 , in influenza between 212 and 21,977 How far the figures are reliable one cannot say The disease which shows the greatest epidemic periodicity is whooping-cough, of which 8267 cases were notified in 1935 and only 375 in the other nine years In Britain and the United States whooping-cough shows the least periodic variation of the endemic infections Hydatid disease occurs in Iceland (102 cases with 54 deaths in 10 years) There were 35 known cases of leprosy in 1930, but the number had fallen to 21 by 1939 Gonorrhœa gives about 500 new cases a year ; syphilis an average of 24 only Chicken pox and herpes zoster are both notifiable in Iceland In view of the undoubted relationship of these two virus diseases, it is interesting that their incidences show no tangible correspondence In the death table, old age stands first with 15% of all deaths, cancer second with 14%, then pneumonia, heart disease and apoplexy with rather more than 10% each, and then tuberculosis with 8%

Infectious Disease in England and Wales

WEEK ENDED AUG 8

Notifications —The following cases of infectious disease were notified during the week smallpox, 0 , scarlet fever, 1340 , whooping-cough, 953 , diphtheria, 580 , paratyphoid, 15 , typhoid, 6 , measles (excluding rubella), 5669 , pneumonia (primary or influenzal), 413 , puerperal pyrexia, 142 , cerebrospinal fever, 77 , poliomyelitis, 10 ; polio-encephalitis, 4 ; encephalitis lethargica, 4 ; dysentery, 82 ; ophthalmia neonatorum, 81. No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospital of the London County Council on Aug 5 was 1542, including scarlet fever, 265 ; diphtheria 155 , measles 384 , whooping cough 233 , enteritis 65 chicken pox, 108 , erysipelas, 40 , mumps, 60 , poliomyelitis, 1 , dysentery, 23 , cerebrospinal fever, 8 ; puerperal sepsis, 16 , enteric fevers, 4 , german measles, 4 , other diseases (non-infectious), 95 , not yet diagnosed, 101

Deaths —In 126 great towns there were no deaths from scarlet fever, 1 from an enteric fever, 8 (0) from measles, 2 (1) from whooping-cough, 11 (1) from diphtheria, 34 (3) from diarrhœa and enteritis under two years, and 10 (0) from influenza The figures in parentheses are those for London itself

Stockport reported the fatal case of enteric fever Birmingham had 4 deaths from diarrhœa, and Liverpool 3 from measles

The number of stillbirths notified during the week was 206 (corresponding to a rate of 35 per thousand total births), including 14 in London

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THE Ministry of Health memo on scabies and how to deal with it has been revised and extended (H M Stationery Office, pp 4, 1*d*) It now includes a description of the life history and habits of the acarus, a clear account of the symptoms and differential diagnosis (by Dr A M H Gray) and fuller advice on treatment Benzyl benzoate is still favoured, but where the patient must do his own application the memo advises sulphur ointment in two-thirds BP strength

Notes and News

ANCHORING HOSPITAL PERSONNEL

THERE is reason to think that if B1 medical officers hospitals are allowed to transfer freely from one ospital to another some hospitals will go short of staff posts, it will be recalled[1] are whole-time posts, not lways resident, for which previous experience is essential, ey are subdivided into B1 and B2 posts B1 posts clude the RSO RMO, registrar and others of equivalent nk at voluntary hospitals, and appointments with a enure of more than one year and carrying a salary of ore than £350 at a municipal hospital, all the remaing B posts are B2 Hitherto B1 posts have been filled rom among those holding B2 posts, but now that men t for military service holding B2 posts are to be recruited or service with the Forces at the end of their six months f office (Ministry of Health circular 2660), vacant B1 posts ill have to be filled by women, men who are physically nfit for the Services or foreign doctors; the supply is hus limited At the suggestion of the Central Medical Var Committee the Minister of Health has agreed that he movement of holders of B1 posts should be controlled, nd has decided to use his powers under Defence Regulaion 58A. Thus if the holder of a B1 post wants to leave is hospital (except to transfer to another hospital nder the same authority) and his hospital thinks it ssential to retain him, the senior regional officer must e informed of all the circumstances or, in the case of he London sector hospitals, the information must be ent to the headquarters of the ministry The doctor's position will then be investigated, in consultation with representatives of the CMWC, from the points of view of the two hospitals affected; and unless the proposed transfer is one which the minister thinks should be reasonably allowed the doctor will be directed to stay where he is The minister feels confident that, knowing the difficulties in which hospitals are placed by the withdrawal of personnel for the Forces, doctors will make the best of this temporary restriction of movement The arrangements will come into force in November.

PSYCHOTHERAPY IN GERMANY

SOME therapeutic trends in Central-European medicine are reflected in a postgraduate lecture by J E Staehelin.[2] He is less enthusiastic than most English and American psychiatrists about convulsion therapy in depressions and involutional melancholia, and advises caution because of the dangers of fractures and circulatory and cerebral damage He is definitely opposed to the use of convulsion therapy in the outpatient department or consulting-room, and he has seen plenty of relapses after temporarily successful treatment He advocates insulin treatment without the production of deep coma, continued over a long period, and also favours intensive treatment with sex hormones and several other methods such as treatment with acetylcholine, or tincture of opium Amphetamine and related "waking-up" compounds are recommended for simple retarded depressions with apathy as the main symptom and prevailing vagotonia, but are contra-indicated, he considers, in all agitated and restless cases Treatment with amphetamine should be interrupted for a few days after a week or two, to avoid the danger of addiction and the insomnia which this drug produces when taken in excess. In discussing epilepsy he enumerates the factors which favour the onset of convulsions, among which is reduced oxygenation of the brain which may result during sleep, especially when the pillows are too soft and the room ill-ventilated, or when the patient has cardiac or pulmonary disease Shifting of the acid-base equilibrium towards alkalosis may also favour the onset of fits, and to promote acidosis he advises periodic fasting, pyrotherapy and a ketogenic diet; since hyperventilation favours alkalosis he discourages patients from taking excessive physical exercise A high blood-chloride is also to be avoided, and he recommends that a diet poor in salt should be tried first in all mild cases A low blood-sugar, especially in the morning, may provoke convulsions, and he believes in careful regulation of the carbohydrate intake so as to avoid this Water retention, associated with a high chloride content of the body and excess of posterior pituitary hormone, should be counteracted by a diet poor in fluids and by boric acid preparations which help to dehydrate the brain and favour acidosis He advises the relief of increased intracranial pressure—for example, in status epilepticus—by lumbar puncture For the hyperexcitability of the central nervous system he suggests the usual sedative drugs: bromides, and phenobarbitone and other barbiturates Disturbances of the vegetative nervous system are improved, he finds, by atropine Failing circulation and a tendency to vascular spasms he treats with cardiac stimulants such as caffeine and nikethamide, and he advises thyroidectomy in suitable cases

THE ILLICIT USE OF NARCOTIC DRUGS

THE justice of the warning, issued by the Advisory Committee of the League of Nations on Dangerous Drugs, against any relaxations during war conditions is borne out by the statistics of seizures of illicit traffic in 1939 Thus in Burma in that year 5644 kg of opium (raw and prepared) were seized, in Turkey 2291 kg of raw opium, in Egypt 1110 kg of opium, 24 kg. of heroin and 723 kg of hashish In the United States, where the manufacture of heroin is forbidden 86 kg was confiscated, and no less than 22,623 kg of Indian hemp including marihuana (the dried flowering tops of the cannabis plant) were seized in 1939 Japan has never been very zealous in carrying out the various opium conventions to which she is a party and in the parts of China which she has over-run there seems to have been encouragement rather than repression of the abuse of habit-forming narcotics The advance made in the Far East, under international conventions since 1912, in restricting to medical and legitimate purposes opium, prepared opium, morphine, heroin and cocaine and their preparations appears to have been checked and reversed with the physical and moral results attending such reaction

PULMONARY EMBOLISM AFTER VARICOSE-VEIN INJECTION

A FATAL case of pulmonary embolism has prompted A M Vaughn and W. M Leis (*J Amer med Ass* 1942, 118, 1293) to draw attention to the danger of injecting varicose veins in patients who are not ambulatory during treatment They also emphasise the known fact that thrombophlebitis increases the chance of embolus formation. Their patient was a woman of 65, active and well except for ulceration of a patch of skin on the anterior surface of the left leg at the junction of its middle and lower thirds In the patellar and popliteal regions there was reddish-blue discoloration of the skin, which was, however, unbroken. The veins of the leg were enlarged and tortuous There seems to have been no suspicion of phlebitis On March 28, 2 c cm of 5% sodium morrhuate was injected into a varicose vein just proximal to the ulcer Evidently there was no improvement from this one injection, and the patient was admitted to hospital on April 14 From this time until her death on April 28 she was kept in bed. Hot fomentations and a heat cradle were applied to the leg, and four injections of 1 5 c cm of 5% sodium morrhuate were given between April 16 and 20 After the last injection the ulcer was healing rapidly The woman died suddenly on April 28, and autopsy showed that both main pulmonary arteries and their first division were occluded by coiled emboli The left common iliac vein was distended with blood; its tributaries deeper in the leg were occluded by antemortem clots There was generalised arteriosclerosis especially of the abdominal aorta and the coronary arteries Vaughn and Leis believe that the enforced rest and immobility of the patient were the main factors in promoting the thrombophlebitis, and that it is wrong to stop the daily routine activities of a patient during injection treatment of varicose veins Their view is supported by an analysis of 44 published cases of fatal pulmonary embolism following this treatment Incidentally, the analysis shows that no one solution is particularly blameworthy Fatalities have occurred after injection of a great variety of substances, including sodium morrhuate, quinine and urethane, sodium chloride, dextrose and invertose

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[1] See *Lancet*, 1940 i 1104 [2] *Schweiz med Wschr* 1942 72 505

Medical Honours

The following awards have recently been made

GM—The late Surgeon Lieut Commander R M Bremner, MB EDIN, RN

MC—Captain R E S Lewis, MB EDIN, RAMC, Captain C D Weir, MB EDIN, RAMC Captain A G J P Fernandes, MB, IMS, and Lieutenant D J Burnett, IMS

RNVR Officers Decoration—Surgeon Commander W H Butcher, DM OXFD Surgeon Commander J B Oldham, FRCS, and Surgeon Commander H M Petty, MB LEEDS

Foreign Awards—Norwegian Military Cross with Sword—Lieut-Colonel (A/Colonel) A J Beveridge MC, MB NUI, RAMC, and Captain W M Burgess, MB, RAMC *Greek War Cross (third class)* Surgeon Lieut Commander J C Moor, MB DURH, RNVR

Medical Casualties

The following casualties have been announced

Died—Lieut Colonel Homi Rustomji Cursetji, MB BOMBAY, DOMS, IMS

Missing—T/Surgeon Lieutenant A P Curtin, MRCS, RNVR

Previously missing, now officially reported P of W—Major I A B Cathie, MD LOND, RAMC

P of W—Captain E F M Caraher, MB NUI, RAMC, Captain A F Murray, MB ABERD, RAMC, Major J M Officer, MB EDIN, RAMC Lieutenant A C Price, MRCS, RAMC, Major L F Richmond MB DURH RAMC, WS/Captain R L Sanderson, MB EDIN, RAMC, and WS/Captain D B Watson, MB RAMC

Wounded—A/Colonel D V O'Malley, OBE, MB NUI, IMS

Irish Dietetic Council

The first annual report of the Dietetic Council, appointed last autumn by the Medical Association of Eire, is a record of useful work under the chairmanship of Dr P T O'Farrell, with Prof W J E Jessop as hon secretary The council has induced the St John Ambulance Brigade, the Irish Red Cross Society, the Order of Malta Ambulance Corps, and the School of Domestic Science to hold classes in dietetics Several papers on dietetic subjects have been published in the *Journal of the Irish Medical Association*, and the council has been in constant touch with Government departments on questions of food supplies and of health

India's War-time Medical Services

Unlike other arms of the defence services, field units of the Indian medical services do not exist in peace time, but since the beginning of the war over 300 have been raised and are now serving in the United Kingdom, Middle East, East and West Africa, Palestine, Iraq, Iran, Ceylon, the Seychelles and in India itself Ambulance trains have also been provided for railways in the Eastern theatres of war and hospital ships were used for the evacuation of casualties from Iraq, Iran, Burma, Assam and Eastern Bengal To meet these demands many new training schools have been started and the old ones rapidly expanded A centrally controlled Army medical store organisation has also been created which, in addition to the normal calls on its resources, has helped the American, Chinese and Russian armies

Training School for Mental Nurses

London needs 700 mental nurses and to encourage the flow of recruits the LCC have set up a training school at Claybury Hospital which will give new entrants a gradual introduction to their work The school is intended to act as a feeder to the council's mental hospitals to the north of the Thames—Claybury, Friern, Leavesden and St Bernard's—and if it is a success the council will consider setting up schools at other hospitals The school accommodates twenty nurses at a time Each has her own bedroom, is provided with uniform and receives the pay of a probationer The four-week course includes a good deal of individual tuition, lectures and demonstrations in elementary nursing, and visits to wards, kitchens, laundries and laboratories

PREMAXILLARY CYSTS—Dr H T Roper Hall, of 43a, Calthorpe Road, Five Ways, Birmingham, 15, asks for details, models, radiograms, specimens or histories of cysts in the premaxillary region, especially those in the region of the lateral tooth, in which diagnosis was complicated or origin uncertain, and the teeth not apparently involved

Major JOHN GILMOUR, FRCSE, RAMC retd, an officer of the Department of Health for Scotland, has been appointed a temporary inspector under the Cruelty to Animals Act 1876

A PRIVATE investigation quoted by Dr Gustaf Alegård in *Fackföreningsrörelsen* showed that in Stockholm the infant mortality per 1000 live births was 14 3 where the father's income was over 10,000 kronor (£600) a year, and 48 9 where his income was less than that The rate for the whole country for 1940 was 38 6, in a prosperous farming district in southern Sweden it was 32 and it rose to 67 in the sparsely settled extreme north

Births, Marriages and Deaths

BIRTHS

ANDERSON—On Aug 6, in London, the wife of Major Ian McAllister Anderson RAMC—a daughter

BARRY—On Aug 8, at Dublin, the wife of Surgeon Commander T L Barry, RN—a son

BROMLEY—On Aug 12, at Bury St Edmunds, the wife of Dr J W Bromley—a son

CRESSALL—On Aug 11, at Oxford, the wife of Captain S F V Cressall, RAMC—a son

EXNER—On Aug 11, at Winchester, the wife of Dr G G Exner of Harley Street, W 1—a daughter

HANCOCK—On Aug 12, at Aylesbury, the wife of Dr F R Thompson Hancock, of Stoke Mandeville—a son

HENSON—On Aug 13, at Bath, the wife of Captain Ronald A Henson, RAMC—a daughter

KENNERLEY—On Aug 10, at Harborne, the wife of T/Major T A S Kennerley, RAMC—a son

LEWIS—On Aug 11, at Woking, the wife of Surgeon Lieut Commander B S Lewis, RN—a son

RIGBY JONES—On July 31, in London, Dr Peggy Rigby Jones (née Permain), the wife of Lieutenant Guy Rigby Jones, RAMC—a son

ROBERTSON—On Aug 12, at Evesham, the wife of Dr J M Robertson—a son

MARRIAGES

ADLINGTON—LAYLAND—On Aug 10 at Torquay, John Adlington, MB, surgeon lieutenant RNVR, to Nora Frances Layland WRNS

PIGGOTT—POWLESLAND—On Aug 8, at Newton Abbot F Stanley L Piggott MRCS, of Teignmouth, to Nancy Powlesland

SPENCE—PIKE—On Aug 10, at Oxford, James Henderson Spence, MB, to Edith Pike

DEATHS

ASHE—On Aug 7, at Ombersley Worcs, Henry Park Ashe MRC

HENDRY—On Aug 13, at Rugby, Robert Applegarth Hendry, MD LOND, MB LPOOL formerly of Liverpool

INSTONE—On Aug 14, Noel Instone, MB LOND, at Addison Road, W 14

WALKER—On July 24, William Walker, MC, MD ABERD major RAMC retd, pathologist to the Tynemouth Victoria Infirmary, aged 51

SIR HAROLD SCOTT will retire at the end of August from the post of director of the Bureau of Hygiene and Tropical Diseases which he has held since 1935 The Secretary of State for the Colonies has appointed Dr Charles Wilcocks, the present assistant director of the bureau, to be acting director

Mr BOWDLER HENRY, MRCS, LDS, has been appointed honorary consulting oral surgeon and consultant adviser to the Royal Netherland Army, the Fighting French Force, the medical section of the Czechoslovak Red Cross, the central committee of the Polish Red Cross, and the Royal Norwegian Ministry of Social Welfare

ALVARENGA PRIZE—The College of Physicians of Philadelphia have awarded this prize for 1942 to Dr Edwin J Cohn, professor of physiological chemistry at Harvard University, in recognition of his contribution to our knowledge of blood proteins

The AMERICAN RED CROSS HARVARD FIELD HOSPITAL UNIT which was established in England two years ago has now been taken over by the United States Army It is to be used as the central medical laboratory for the American forces in this country

Messrs MAY and BAKER have issued their 'Stovarsol Vaginal Compound' (S V C) tablets for the treatment of trichomonas infection in a new shape—rectangular with rounded corners—and with a new excipient It is claimed that these changes will ensure greater ease of insertion, more regular disintegration and less tendency to breakage, and will promote an acid reaction in the vagina

PETHIDINE HYDROCHLORIDE, a synthetic compound closely allied to morphine in composition, and combining the analgesic effect of morphine with the spasmolytic effect of the atropine group and papaverine, is issued by Roche Products in 50 mg ampoules for subcutaneous, intramuscular or intravenous injection, and in 25 mg tablets

ON page 190 of Aug 15 we said there is only one chair of pædiatrics in England, there are in fact two—at Birmingham (Prof L G Parsons) and at Leeds (Prof C W Vining)

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

1942 Students Guide 1943

THE LANCET

MEDICINE TOMORROW[1]

R. S. AITKEN
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THE most striking change in the organisation of the medical profession within the community, during the last hundred years, has been the development of specialisation. Besides those who practise the major specialties, there are men who specialise in narrow groups of diseases like the venereal diseases, or in single diseases like pulmonary tuberculosis, and men and women who spend decades doing little beyond the routine examination of school-children. Physicians subdivide themselves into neurologists, cardiologists, chest physicians and so on, while there are specialist surgeons who narrow their field to one small region of the body, almost to one kind of operation. (There was even a group of surgeons in the Royal Society of Medicine who segregated themselves in a subsection of proctology, wilfully imprisoning their narrow lives within the muddy walls of the rectum.)

OVERGROWTH OF SPECIALISATION

It is worth inquiring what are the causes of this papilliferous growth of specialism. The first is obvious: knowledge and technique in medicine have advanced so far that one man cannot master and develop more than one small field in a lifetime. Differentiation of function leads to better performance, and to that end specialism is necessary and good. Another cause, however, is that in large towns specialism offers an easier life, more regular hours and higher fees than general practice; it has therefore attracted those who coveted the prospect of large rewards for smaller effort, and many who could afford to specialise had no greater intellectual ability than others who have had to devote themselves to general practice. A third cause is the development of specialist state services. The voluntary hospitals were unable to provide beds enough in suitable surroundings for the treatment of pulmonary tuberculosis; so the state set up sanatoria and dispensaries for the management of that disease, and a special service of tuberculosis officers who deal with that condition and that alone. The practitioners and the hospitals between them were incapable of detecting and treating venereal disease; so the state stepped in and created another self-contained isolated special service. The practitioners could not or would not keep a medical eye on school-children at frequent intervals (which is a good thing to do), for the simple reason that they were not paid for it; so a school medical service was instituted. For just the same reason now we see maternity and child-welfare clinics being created, and even special doctors undertaking the simple injections necessary for diphtheria immunisation. The motive behind all these state services is good—they are directly aimed at the welfare of the people. But notice that they all arose because of the failure of the voluntary hospital system and the general practitioner system to meet the needs of the people. They did not come into being because the work involved was so difficult as to require special ability or training; it was simply that doctors had to be paid salaries to work in these special fields because the independent practitioners were not doing the work.

Seeing then that specialism has had such mixed origins, we may well inquire whether it is altogether a good thing. Up to a point it obviously is. But it has in parts gone beyond that point. The one-eyed specialist comes to be too much interested in his disease or his operation, too little in his patient. The cardiologist must diagnose some cardiac disease or nothing at all. There are cases of bronchiectasis lying about undiagnosed in sanatoria because the tuberculosis specialists have forgotten every other disease except tuberculosis. The too narrow specialist gets bored with his job because it is too monotonous, and no-one can do a job well who is bored with it. How much can a school medical officer do for school-children whom he examines only three times or so in their school career, when he never sees them in their homes, never gets to know their parents, never follows the course of disease in children either in their homes or in a hospital? The nature of his job, one would think, must lead to atrophy of his medical mind; little wonder that he sometimes comes to consider that every tonsil bigger than its owner's marbles should be guillotined. The narrow specialist gets narrower still if he works in a special building, away from his colleagues in other fields of medicine, never consulting with them over problems of sickness or health, never learning from them or having his mind criticised and cross-fertilised by theirs. Those are some of the ill results of specialism, which strongly suggest that, necessary as it is, it has in places gone too far. Another weakness is that it has robbed the general practitioner of much work that he can do quite well, or at least could do well if he had better conditions in which to work and closer contact with the real experts in the special fields who could guide and advise him without extra cost to his patient.

Turn now to specialism in medical education. What a way we have come since the days when the medical student apprenticed himself to a doctor in practice and learnt his job, haphazard but practically, from his master. Look at our modern curriculum—a great agglomeration and conglutination of subjects each in an almost water-tight shell. We are trying to feed the embryo doctor through a placenta made of stratified cornified epithelium instead of through a living syncytium. Each subject is necessary, of course, and each subject is developed and taught much better by its specialists than it could be by any jack-of-all-trades; but the specialists tend to teach their subjects, instead of teaching their students. At every curriculum-casting committee in every university you will find every professor urging the great importance of his own subject, fighting for more time to be given to it. It is really very noble of them, for the more time every professor gets the more work he has to do, at the same salary; there is that surprising touch of nobility about professors which you may not appreciate. But if I were the principal of a university presiding over the curriculum-makers, I should say to the anatomist "Now, you go out into the quadrangle while the rest of us decide how much time the student should spend on anatomy." Then ditto to the physiologist, for physiology; and ditto for materia medica, pathology, public health and all the rest of them, with the possible exception of the subject of medicine; there I'd have a few good practitioners in to make sure that the student has plenty of time for practical experience of patients, both at hospital and sometimes in their homes. If we went on in the same way to decide what to teach as well as how much to teach we might achieve a reasonably coördinated compassable curriculum. That way or some other we shall, I am sure, alter the curriculum, and I hope we shall go on altering it, for medicine is a living thing, and all living things must grow and change, adapting themselves to their changing environment. "What was good enough for our fathers is good enough for us" is the motto of the dinosaur and the dodo.

MEDICINE IN A CHANGING SOCIETY

The social environment of medicine in our country is changing fast. Last century was the heyday of free-trade: buy in the cheapest market, sell in the dearest; never mind who suffers, so long as the dividends are high; fight with your competitors, undersell them, buy them up; judge your success by your balance-sheet. Those were the orders of the day, and they worked pretty well for a time. But when international competition pressed hard on us, when slumps came, the ruthlessness of unrestrained commercialism gave us our millions of unemployed and our cancerous depressed areas Under that system we distributed the profits of trade unequally, and the losses with cruel unfairness But at the same time the notion was growing that services rendered are more important than profits gained In a few enterprises the people as a whole took charge, through Parliament or local authorities, in the hope that they would get better value and fairer distribution than competing private firms could give them The Post Office was one of the earliest examples Education was another with few exceptions, schools and universities are run by the people through their representatives, and their aim is to get good teaching, not to make big profits either for teachers or governors Many electricity and gas undertakings are now owned and managed on the same principle, so are the BBC and some parts of the nation's transport organisation Then the war came, and in an astonishingly short time the whole of industry and the bulk of commerce have come under direct government control

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[1] Presidential address to the Students' Medical Society of the University of Aberdeen, May 19, 1942.

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In war the needs and the safety of all of the people are obviously paramount, for if one section of them is allowed to go hungry or unprotected the whole population is jeopardised, so commercial competition has been whittled down to next to nothing, for nation-wide safety and nation-wide security can be achieved only through nation-wide organisation, planned for the people's benefit When peace comes that lesson will not be forgotten, and in many activities national control in some form will persist Call it socialism if you like—it is not a revolution, or a political label, but just a change in social structure that has been coming gradually for half a century and is now coming much faster under the impetus of war Its causes lie deeper than political parties Since it is fundamentally due to the impact of applied science on human life it is an inevitable change and there is no sense in opposing it But there is every need to mould the form and direction it takes, for this may be either the National Socialism of the German totalitarian type (" the squalid hell of the totalitarian ant-heap ") or the democratic variety that we are feeling after

Now medicine has had much in common with commerce A doctor's services were his stock-in-trade which he sold to the highest bidder He would always prefer a practice in a good-class area to one in a poor area, if he thought he could make it He would often be jealous and unfriendly towards his fellow practitioners in the town, he might say to himself that this was because they were incompetent unscrupulous cads, but the basic reason was that they were his competitors He could hardly help giving more time and attention to his private patients who paid fees than to his panel patients He could hardly help being more interested in Johnnie Anderson's acute appendicitis, which called for a dramatic and expensive operation, than in Tommie Davidson's nocturnal enuresis, which required a series of interviews with Tommie's terrifying mother His work was often good and it no doubt owed much to the stimulus of fees and competition, but in many ways it was hindered by the fact that he was selling his medicine in the market, not giving it to those who most needed it True there was the praiseworthy Robin Hood system whereby the specialist served the poor in the hospitals for nothing while he mulcted the rich in maximum fees, but that is rapidly dying because there are more and more specialists needed and fewer and fewer rich to support them Tomorrow the same principle will come to be applied to medicine as to education a nation-wide organisation aimed at nation-wide service, free from commercial competition And this principle will be applied not by the doctors but by the people, just as was the National Health Insurance of 1911 We shall spare ourselves a lot of useless thought and futile words if we see that clearly Irresistible social and economic forces—the demand of an educated people for the benefits medical science can give them—will bring about a nation-wide organisation of the medical profession, and the elimination of commercial competition between doctors Do we sit back dumb, and just wait till it comes? No Organisation must come, but it is in our power as a profession to design that organisation, and it is immensely important that we should design it well

WHAT SHALL WE KEEP?

Two tenets of the medical tradition belong to the very heart of it, and have contributed much to the nobility of our profession at its best, these we must struggle to preserve in the new organisation The first is that medicine gives highest place to the value of the human individual, not to the factory or the town or the state Whether the patient is a great scientist, a leader in politics or a humble rather stupid labourer, a good doctor will do his best for him We build better hospitals for the poor than for the rich, we take trouble to patch up the cripples, and ease the sufferings of people with incurable diseases, regardless of their economic uselessness Who knows better than the doctor that every mother's baby is supremely important to her, though only a cipher to the Registrar-General? The aim of our labours is the health and happiness of our individual fellow men, and we are coming to include in that their mental and spiritual health as well as their bodily health For that reason we set much store by what we call the doctor-patient relationship Every patient is different from every other, and the doctor who wishes to guide a patient towards better health must know him personally and know him well The individual, however, is not an independent unit, his health and happiness are greatly affected by his ties with his fellow-men Indeed if you turn philosophical in a simple way and ask yourself wherein human happiness lies, you can't say much more than this a man is happy in his work and in the human relationships he achieves with his family and his fellows provided he develops his best powers to their fullest in those two spheres The doctor's task is to help individual people to that enjoyment and employment of their own powers This emphasis on the importance of the individual is not peculiar to medicine It is fundamental in the Christian religion, especially in the protestant forms of it And it is of the essence of democracy "We hold these truths to be self-evident," runs the Declaration of American Independence, "that all men are created equal, that they are endowed by their Creator with certain inalienable rights, that among these are life, liberty and the pursuit of happiness" The medical view, the religious view and the democratic view are all essentially the same

The second principle in the medical tradition is really an application of the first to the doctor himself It is that the doctor should have liberty He should be free to seek the job in medicine that draws the best out of him, to put his best in the way of effort and enterprise into his work His liberty, like all democratic liberty, should be limited only by the one restriction—that his exercise of it shall not do wanton harm to someone else Apart from that he should have scope enough and responsibility enough to develop his own powers to his utmost

HOW SHALL WE KEEP IT?

The future organisation of medicine can do much to destroy, or to preserve, those two principles A service based on the old-fashioned Army model, where orders and regulations emanate from headquarters, and for all below the rank of general the rule is "theirs not to reason why, theirs but to do or die," is one possibility It could be made to work like a beautifully designed machine, or an automatic telephone exchange, but it would be blind to the individuality of patients, and would tend to treat all those bearing the same diagnostic label in exactly the same way Many of the doctors working in it would flag in their interest, and lose their drive; the rules would check their initiative and hinder their development, and standardise medicine into the semblance of Woolworth's stores We should hate that, and medicine would become a poor thing

Can we picture an alternative, where within the frame work of a nation-wide organisation and under efficient general direction doctors can keep their true liberty and the welfare of the individual patient can remain the guiding aim? The model I suggest is the mammalian body, whose ways of working we know a little about It has central direction, in the brain, but that brain is the focus of constant impulses streaming in from the whole body—information about the outside world, its opportunities and its dangers, news about this and demands for that from the body's various parts Indeed when all these afferent impulses are cut off the cerebral cortex ceases to function and goes to sleep. But even when functioning the brain leaves a lot to the common sense and enterprise of the various parts of the body. The heart, the kidneys, the liver and many other glands are semi-independent; they can vary their activity a great deal to meet changing needs, without reference to the brain. Even the bladder, when cut off from the brain in paraplegia, can run its own show—or should I say pump its own ship? That is what the physiologists call an integrated organism. Every little part has its job to do, its own share of responsibility and independence, and its own voice in the management of the whole concern. It is an excellent model for the future medical organisation in which we want the individual doctors, and the little groups of doctors working in group practices, in hospitals, in local health services, to have the maximum possible of responsibility, both for their own work, and for the policy of the institutions in which they work, all under a tolerant and stimulating general direction.

TRAINING OURSELVES

This is not the place to discuss the detailed anatomy of such a medical service. Planners in plenty are already occupied with that and all whose motives are disinterested should be encouraged. Here however we might usefully ask what qualifications you and I need if we are to play our part as individual cells in the new organism. I take for granted reasonable intelligence and those northern virtues of honesty, hard work and so on which are carried on the same chromosome as an addiction to porridge and a true appreciation of whisky, and I propose in addition three qualities that we need to cultivate in ourselves.

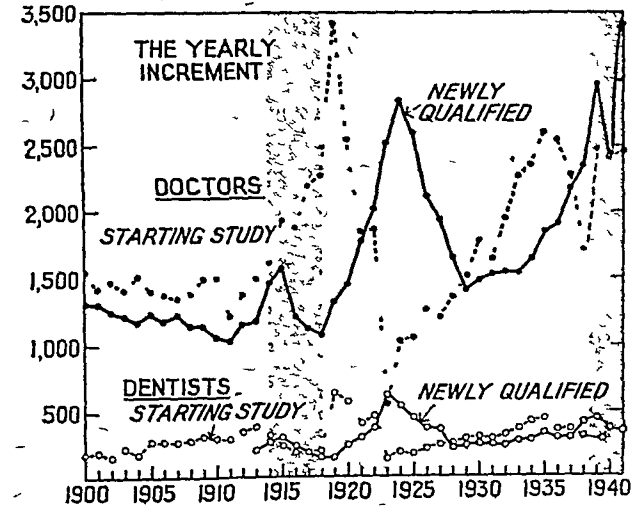
The first is the faculty of getting on with people. We all know and value the social aspect of this faculty but it also has its bearing on work. Some people cooperate much better than others, in getting a job of work done by a team. Cooperation means working with, and it isn't always easy, for the other people are so often fools, or lazy, or distasteful to us. Our medical training as students doesn't give us much practice in cooperative tasks; in hearing lectures, studying books, sitting examinations it is every man for himself. Only when we become residents do we find ourselves one of a group of people concentrating on a joint task, and even then the division of labour among chief, houseman, sister and nurses is so sharp that each of us feels still very much on his own. In other student activities, however, we do see some joint effort, which has to be planned and carried through by groups of people working together. Every student club and society is an example, except where the committee leaves everything to the poor dog of a secretary. But we need *much more training* than we get in the technique of sharing a job with other people, and in the technique of joint thinking and planning, which is what most committees are supposed to do. Medical men are often bad committee men, and that is a pity, for committees, small and large, are essential to our integrated democratic medical organisation. They are like the peripheral ganglia of the autonomic nervous system. The procedure of a committee should run like this: (1) collect the facts; (2) hear the views of everybody; (3) discuss those views with the object of evolving a joint opinion, or at worst, a majority opinion; (4) take action on that joint opinion. The faults arise in (3) and (4), forgetting that the object is to evolve a joint opinion, people indulge in dog-fights or go off on irrelevant reconnaissances which waste time. When it comes to taking action, those who didn't approve of the action decided on must still do their best to carry it out, unless they feel strongly enough to resign. I believe that we need to study and practise the technique of working in groups and thinking in groups if we are to make a success of the medicine of tomorrow. There is going to be little room for the lone hand. I know the lone hand is occasionally a genius; in that case we should be tolerant and indulge him, give him his head and his opportunity, not insist on his obeying every rule and regulation that we have imposed on ourselves. But much more often the lone hand is just a capable enough man, with an excessive share of selfishness and obstinacy, and he is more nuisance than he's worth.

The second quality we must encourage in ourselves is enterprise and ingenuity. Medicine is a living growing developing thing, and changes fast. If we limit ourselves to learning what the last generation had to teach us and carrying that out, we are a drag on its advancement. That was medieval medicine, in which the last word was Galen; it should have died with Harvey, but the dodos are still among us. We should blot their motto out and put up instead, "There must be a better way of doing this: what is it? Let's try something." A restless desire for improvement is a real necessity, and the way to improve is to think a little and then to experiment. Surely there are better ways of studying medicine, of teaching medicine, of running a ward. We should be enterprising and ingenious in our own small spheres now, and we should carry that impulse to continuous improvement into our new organisation when it comes, whether we are to have big jobs in it or little ones.

Thirdly, I think we need something in the nature of an ideal to hold in front of us. The word "idealist" has acquired a faint flavour of scorn, at least on the lips of the hard-boiled "realist," who is convinced that what he knows of life is all anyone knows or needs to know. Ideals too, blossom best in the minds of youth, at a stage in life when the means of realising them are not to hand. The middle-aged and the elderly—an increasing proportion of the population—impressed by their own success or cynical from their own disillusionment, often rate experience as of more value than ideals, and apply damp cloths to the ardent brow of youth. Now I wonder whether that has been happening too much in our country, for great achievements in human life are to be realised only by the process of putting faith in an ideal and working for it. There are two incentives that will make a donkey move—a carrot before his nose, or a goad stuck into his rump—and you and I know that we make our best and most effective effort when we are all out after a juicy carrot, not when we are reluctantly spurred by the goad. I look at the immense achievement of Germany, in preparing and launching this war; its power came from the ideal of world domination dangled before the eyes of German youth. A foul and rotten carrot, it is true, but it produced a mighty effort. I look at the even greater achievement of Russia, in organising 170 million people into a modern industrial state within a decade or two. The ideal there was the application of modern science to developing the material resources of a rich neglected country. The youth of Russia had faith in their ideal, even to the dangerous extent of talking about it, and they have not only achieved the greater part of their object, but have also put themselves, in the bygoing, into the same military class as Germany. What ideal was stirring the hearts and stimulating the effort of our British youth before the war? I am afraid the answer is, hardly any. I am afraid we mostly drifted or meandered along well-worn traditional paths until we were suddenly face to face with impending calamity. Shall we resume our drifting after the war? If we do the calamity will not only impend next time but will befall us. The war is hardly worth fighting unless we are going to enrich the peace that follows with a new and vigorous effort after something worth while, something better than we've had before. That is true in medicine as much as in national life, and in medicine the ideal is not far to seek. It is to secure better health, physical and mental, for every man, woman and child in the country. Set that up as your ideal; remember our belief that the individual is the most important unit, and that every individual differs from every other, and you will be doing something far better than human stud-farming aimed at industrial or military efficiency.

Begin with the individual, as the doctor should, and you will soon find how intimately he is related to his family and community. Study the effect of that on his health and you will come up against all sorts of problems waiting to be tackled. If you conclude, for example, that good mental health is rooted in good family relationships, you will agree that the general practitioner should be a family doctor. You will ask what size of family is best, and you will probably decide that father, mother and four children is about the minimum, because, well managed, that provides a rich and varied pattern of relationships for its members to live through. Then you will inquire whether society makes it possible, or not too difficult, for parents to have four or more children, and manage their families well If not, why not? You will look at the ageing and the old members of the community You will see how devastating it is, to their health, when the community casts them off, leaves them with no job of work to do, but with only a depressing sense of senescent futility You will ask why society doesn't reorganise the work that has to be done, in such a way as to give the old people a share in it suited to their powers —jobs that are not too big, lest they exhaust themselves or wield too great an influence as brakes on progress, but jobs that will make use of their wisdom and their remaining capacity, preserve their self-respect, and literally keep them longer alive Among the younger people you will often wonder whether so-and-so's job is the one that he is best suited for, and you will ask whether ways and means can't be found for avoiding occupational misfits and setting the square pegs into square holes You know already how we are up against the problems of nutrition and housing, how inadequate food and overcrowding make millions of people fall short of their best in the way of health In all these and many other ways, if you seek as your ideal the better health of every single individual, you will find a task that is big enough and worth while enough to call forth all the brain, enterprise, sympathy and powers of work that you possess You will also encounter social, economic, and political difficulties that you alone are powerless to overcome, you alone can do nothing to relieve poverty, nothing to improve education; you will feel helpless and almost hopeless, and you may be tempted to fall back dispirited on bottles-of-medicine treatment, and the feeble palliation of preventable ill health But supposing the whole medical profession could make up its mind on any one of these wider problems and tell the country with a united voice and with fifty thousand separate voices just what ought to be done, would that be without effect? By no means. If we had an integrated medical profession, loyal and pulling together, we could exert an undreamt of influence for good in politics and economics We could have diphtheria immunisation made universal in a year, and tubercle bacilli banished from the milk in very little longer "Idealism!" you say mockingly, "you'll never get doctors to work together like that" Why not try?

THE NUMBERS WHO ENTER THE MEDICAL PROFESSION



Changes in the Curriculum

TEACHERS INTERVIEWED

How would you teach the medical student to relate chemistry to pharmacy and to metabolism?—The relationship of chemistry to pharmacy is, I think, best dealt with by having a course of pharmacology in which drugs are considered from the point of view of their mode of action, and chemical structure is only discussed on broad principles, especially where it is related to mode of action In addition, some relationship between chemistry and pharmacy can be shown in the course of practical pharmacy, for example when discussing incompatibles The relationship of chemistry to metabolism is best taught by coordinating courses throughout the medical curriculum Misunderstandings commonly arise because of lack of coordination between the teachers of chemistry in the first year, biochemistry in the second and third years, physiology, and so-called pathological chemistry and the clinical aspects of metabolic disorder during the later years These various aspects of chemistry in relation to metabolism can best be made clear to the student in the physiology department

How could you bring back into wedlock those divorced subjects, human structure and function?—One of the most retrogressive changes in recent years has been the shifting of histology from physiology to anatomy departments In the past it was the practice to teach microscopic structure in relation to function, and this is obviously most properly and competently done in a physiology department Many modern anatomists are well able, and indeed anxious, to stress function rather than structure, but it is doubtful whether in practice the average anatomist is in a position to deal adequately with the functional side of the question Then undue stress is laid on morbid anatomy by pathologists, to the exclusion of abnormal function The Oxford school have done much to promote experimental pathology and the investigation of the functional errors in disease, but elsewhere the old type of morbid anatomy still prevails

How would you light in the student the impulse to keep abreast of advances in therapy?—Scientific societies at which papers can be read and discussed helps to interest the student in progress Much can be done in a pharmacology course, especially on the practical side, to give the student an insight into clinical research, so that he is interested in advances and competent to assess the value of work he may read about A student should be encouraged to keep in touch with current literature, by guidance in medical reading during his clinical training he will soon develop good habits in this respect The fundamental principle is to interest the student in his subject, and if this is done he will have the impulse to keep abreast of advances in it

OUR PLACE AMONG THE ANIMALS

In teaching zoology my own aim has been to bear in mind these issues the student needs a comprehensive picture of the vertebrate body as an integral whole as

REGISTRATION

No-one is a *legally qualified* medical practitioner unless his name appears on the Medical Register kept by the General Council of Medical Education and Registration of the United Kingdom The Council is a standardising body, ensuring that there is a definite minimum of medical education and examination requirements and it is responsible for discipline within the profession Any application to be admitted to a school of medicine on beginning the medical curriculum proper should be addressed to the dean or other appropriate authority of the school to which the applicant desires to be admitted

The number of students admitted to British medical schools during 1940–41 was 2415 The entry for 1941–42 is estimated at about the same figure, as shown in the graph, though the returns are not yet quite complete The quota imposed on admissions to medical schools is likely to maintain numbers at about the same level while the war lasts a basis for subsequent more detailed study of human anatomy and physiology, he needs a grounding in the cellular structure of the body as a basis of later studies in histology and pathology, and some familiarity with animal phyla as a basis for the study of tropical medicine and helminthology; if he intends to take up public-health work he should have a thorough grasp of principles of heredity. I therefore divide my course into three parts.

I. *How animals work.*—The physiological anatomy of the vertebrate, with special reference to the frog and man, but with such references to other vertebrates or non-vertebrates as illustrate particular functions (e.g., ciliary action), practical work, including dissection of frog, rat, dogfish and pigeon, demonstrations on selected topics including reflex action and the reversible oxidation of respiratory pigments (hæmoglobin and hæmocyanin).

II. *How animals develop.*—Development, histology and heredity, the nature of sexual reproduction and its manifestations in relation to habitat, different types of embryonic development from the same standpoint, characteristic animal tissues, chromosomes, sex differentiations, genetics, including the chromosome map, experimental modifications of development. Practical work on development and fertilisation of the sea urchin's egg alive, demonstrations of organogeny, microscopic study of living tissues as well as micro preparations, demonstrations of genetic exponents (drosophila), quantitative genetic problems for solution.

III. *How animals differ.*—Survey of the animal kingdom with special emphasis on parasitic groups, insect (and other) vectors of disease; methods of control based on understanding of life cycles. Since time is too short to study all animal parasites in detail, I aim at giving as comprehensive as possible a picture of the rôle of animals vis à vis human health.

TOO LONG IN LEADING STRINGS?

I should hate to see the present six-year period increased in any way before qualification. As a past student and present parent of two medical offsprings I think it is long enough but needs reform.

Preclinical.—Is it necessary to include botany? My zoological colleague has set out above his ideas on his subject which appear to me to be excellent and calculated to give good biological foundations.

Anatomy.—In many schools this remains divorced from the doctor's life-work, for though it must always be a basic subject much detailed memorising of facts is quite unnecessary; to learn many minute muscular attachments (such as those of spinal muscles) and to acquire the ability to identify the right from the left trapezium, is frankly a waste of time and effort, since such details are forgotten as soon as the examinations are over. An old teacher of mine used to say that a surgeon should know his anatomy as a taximan knows London—able to get from A to B by the best route, avoiding traffic blocks and congested areas, but not necessarily knowing every street and shop en route. There is much in this. There should be more study, say, of the shoulder-joint as a functional unit, and not so much of every detailed attachment and bony irregularity. The textbooks, examiners and teachers will have to collaborate if this is to come about. I would like to see anatomy studied in 4 terms (not 5 as at present), but continued on a practical and clinical basis into the next period. We should thus save three months.

Physiology.—I should like to see this kept to 4 terms on similar lines to anatomy, and the physicians and physiologists must fight it out. It seems to me that physiologists, like anatomists, are tending to get further and further away from realities as affecting the student of medicine. They are becoming too "pure."

Surgery.—The high degree of specialisation which is immediately upon us has its particular dangers for the teaching of basic surgery to students. Teaching hospitals are becoming a conglomeration of specialists and the education of future professors of surgery will in itself be a problem. However, the problem of the dresser is the urgent one, and there is a danger of lopsidedness if, say, he has three months of urology followed by three months of proctological practice. I think every dresser must start with three months of basic teaching with the professorial unit which must be kept on the ground floor of the surgery, working in wards where ordinary day to day surgery should form the basis of his early training. After this he can have another three months with one of the higher flights. During the first three months some collaboration might be made with the anatomist to give a clinical basis to his anatomy.

A writer in your journal some months ago commented on the immaturity of the medical student; this is because we keep him so, and ripen him on one day when he suddenly qualifies. We do not use him sufficiently as part of the machinery of hospital practice or give him responsibility, though I am sure he is worthy of it and would respond to it. His contact with his obstetric cases more or less on his own gives him a genuine feeling of at last being of some use, and it is good for him. I want him to have at least three months in his fifth or sixth year as a clinical assistant in residence, with some duties and responsibilities. If it can be fitted in as a part of the same plan to "ripen" the man more gradually I should like each student to be appointed to approved practitioners for duty in the health centres which are pretty certain to be a part of our new practitioner organisation. After qualification every student should have a minimum of six months residence at approved hospitals and be paid for this service.

SEEING ANATOMY WHOLE

Is it not time that botany was eliminated from the medical course except for some lectures on general aspects of importance to the medical student from the point of view of a biological background, and such points as are necessary for the later understanding of photosynthesis, bacteria, &c.? I cannot see that there is need for an examination if a man is signed up for a short course of such lectures, possibly with practical demonstrations. We no longer collect simples, organic chemistry provides many of our drugs, and the chemist in any case makes up our prescriptions. The opposition will come from the botanists, whose existence is in large measure dependent on medical botany courses.

I should like to see students' anatomy dissection preceded by a rapid specimen demonstration, by an expert, of the dissection of the whole body. Then the student would remember the body as a whole, would not be relatively ignorant of the junctional regions (thorax to arm, and to head and neck, abdomen to leg) as at present. He would also be able, after such a demonstration, to dissect much more rapidly himself. With regard to the study of structure and function, why not introduce many more cinematograph and X-ray films, properly analysed, into the teaching? For function in many cases is movement, and that is best demonstrated by showing the structures in movement.

BEST OF ALL POSSIBLE WORLDS

The curriculum as it stands is a good one and many good doctors have been produced by it in the past. As for the preventive aspects of medicine, I seem to spend most of my life in teaching and emphasising them in relation to obstetrics and gynæcology, and I cannot see that this emphasis can be much improved except in the obstetric functional disorders and diseases that dovetail with general medicine, surgery and pædiatrics. As regards opportunities for the study of social medicine and general practice, speaking as one who was in general practice for a number of years, my feeling is that the man who has been well trained in general medical and surgical principles in the outpatient and inpatient practice of a general hospital is fitted to carry on general practice and should have no difficulty in adjusting himself to conditions that are different chiefly in that he has to assume greater personal responsibility and make decisions on his own account. By the Scottish system the student is attached for a period to a dispensary doctor, whose practice he attends and whose district he visits just as he would if he were an assistant in general practice. A short course in psychology is, of course, very desirable but I think that is now admitted by everyone. As an examiner of long experience I would say that it must be rare indeed that bad or unsuitable questions are set and I cannot give any examples of bad questions being set in recent years. If some system could be devised whereby the students' teacher could always take part in his examination, especially in the clinicals, it would be all to the good.

—OR THE WORST ?

I feel like the captain of a liner which has received a big smash and who is remaining continuously on the bridge, anxious to keep his ship afloat and bring her safely into port, when he is importuned to help prepare a programme for a concert and discuss the decoration of the saloon for the next luxury cruise ! I have something to do with details of a syllabus in my official capacity and I can never get the authorities to agree on the details of any subject Recently we had the anatomists to meet us to hear their views about the syllabus , and a fine mess *they* would have made of it This I fear applies to practically everything You must have a syllabus I suppose, but however detailed its conception and description it is open to criticism So what use would it be for me to say what animals should be dissected in the zoology course, what experiments conducted in physics ? The teachers and examiners in these subjects would never agree Examinations ? Everybody agrees they are not satisfactory and everybody agrees that there is no satisfactory substitute And there is no chance of agreement between examiners themselves The questions I should condemn are the very ones which a colleague at least equally experienced might particularly approbate And conversely

A GOOD UNDERSTANDING

If, as you suggest, the aim is to produce wise doctors, we must, I feel, go farther back than the medical curriculum , for wisdom I take it implies not only the possession of experience and knowledge, but the power to apply them skilfully and critically—and for that the first essential is ability If we could devise some method of selecting as students of medicine only those of high intellectual ability we need not worry too much about the details of the curriculum itself During the past decade the number of applicants to enter each medical school has probably been greater than the number of places available, but there has been little, if any, critical examination of the basis of selection All sorts of factors affect the decision local considerations, blood relationships of the candidate, the school record, confidential reports by schoolmasters and others, the interview in an attempt to assess that indefinable abstraction character, not to speak of the gentle art of ear-biting I confess I find it difficult to believe that any of these considerations is of real help in our search for wise doctors, except possibly the school record And individual variation among the schools in the country makes even the school-record of doubtful import

I would prefer that entrance to a medical school be based on a competitive examination on 4 subjects (English language and literature, including history, and any other 3 professed by the candidate) If it be argued that such a policy would mean putting too much weight on examinations, and would be hard on the slow developer, I can only say that it would be better than the haphazard methods of selection employed at present, and would at least have the merit of being based on a test, the results of which can be measured with a fair degree of accuracy Besides I am not impressed by the attacks constantly made on examinations, often by middle-aged mediocrities and sometimes based on a psychological reaction of the " inferiority " type After all, what is life itself but a test or, if you will, an examination Granted a corps of students of more than average ability, the only other desideratum is a body of teachers with the right attitude towards medicine No-one is likely to doubt the ability or the technical efficiency of the teachers of the present day what might be questioned is their outlook on their subjects in relationship to medicine And yet the recipe, stated in general terms, is simple If each teacher were to recognise that his own special subject is only a focus of interest in the great domain of general biology , that structure is of importance only in so far as it relates to function , and that the only things that really matter in medicine are the preservation of normal function, the study of the means—chemical, physicochemical, environmental, and genetical—by which function is disturbed, and the methods by which it may be restored or alleviated, then all the questions of medical education, so commonly canvassed, would become details of minor importance

There is perhaps one thing more—a careful study of the thirteenth chapter of Paul's first letter to the Corinthians, in itself a not inconsiderable contribution to the study of general biology If it were thoroughly digested by every medical student it would help make the doctor not only wise and comprehending, but human, gracious, and kindly

WHO SHOULD TEACH PREVENTIVE MEDICINE ?

We are all being encouraged to develop the preventive outlook in teaching and to devote more time to instruction in this important subject One of the principal difficulties is that the teaching of preventive medicine is largely in the hands of local medical officers of health and they have proved incompetent as teachers It seems that the practice of preventive medicine does not produce a body of inspiring teachers and, until the schools can have on their staff teachers with a real enthusiasm for their subject and a capacity to impart its principles to others, we shall make little headway I think that one possible line of approach would be for the universities to appoint more whole-time professors in this subject These professors would be able to collaborate with the clinical teachers who, in their turn, would be stimulated to emphasise the preventive aspects of clinical practice At present the clinical teachers never see the public health teacher, who is not a member of the hospital staff and who does not, therefore, have much opportunity of making contacts with his fellow teachers The whole question is bound up with the examination problem When the examiners devote more space to the preventive aspects of medicine the teachers will perforce follow them

I would say that the bad examination question is the one that asks for facts (e g , " describe the signs, symptoms and treatment of typhoid fever ") while the good question tries to find out whether the candidate can use these facts (e g , " discuss the investigation of a patient in the second week of a febrile illness in whom the only physical sign is an enlarged spleen ") The first question is pure book knowledge, the second is one which requires some mobilisation of that knowledge The trouble is that the first type of question is much easier to set and to correct A thorough revision of examinations on these lines might require a larger number of examiners

TRAINING IN SCIENTIFIC METHOD

In universities other than London the teachers have a considerable say in arranging that the questions set in examinations should include some of those parts of the course which have received a special emphasis in teaching owing to the special tastes and experience of the teachers at that university This ensures progressive development of the curriculum by allowing teachers some freedom and initiative in developing the subjects taught In the London schools, by contrast, the development of the curriculum on new lines is severely hampered by the system of what amounts to an external examination

With regard to anatomy and physiology, we are falling between two stools We are attempting in five terms to teach students all the factual material which is likely to be of value to them in later years, and at the same time claiming to give them an education in medical sciences Science, however, requires a training in the appreciation of evidence which can only be obtained from detailed knowledge in a few small fields, and this is incompatible with the examination requirement that students should have a thorough knowledge of the whole subject We ought to lighten the load of factual knowledge by transferring information which is included for strictly vocational purposes, and not as part of the training in scientific principles, to the clinical years and teaching it in courses in applied physiology, comparable with those on surgical anatomy This would lighten the load in the preclinical years and enable students during that period to receive an education on scientific lines Judging from what the teachers at hospitals say it is such scientific training that they value most highly in the students coming into the wards, and it should be possible to combine this with a factual basis sufficiently extensive for practical purposes without being detailed to the point of frustrating interest, as at present

EXAMINING FOR ABILITY

The question whether the examinations are faulty or not depends on the view held as to their purpose. If the final examination aims simply at assessing the state at that time of the student's technical competence then the present examinations serve this purpose. If, however, the aim is to test the student's understanding of his subject and his capacity to learn from experience, then the present examinations fail. If they are to be elevated from simple tests of technical competence to tests of education then they must lay much less stress on factual knowledge and far more on ability to use facts. The type of question, for instance, must change from the favourite kind such as "describe the symptoms and signs of bronchiectasis" to one such as "write an essay on one of the following four subjects. The significance of (1) hypochromic anæmia, (2) œdema, (3) vertigo, (4) pain after food." And more use should be made of the case commentary. It is possible that such a reform of examinations would require that the final examination be split into two parts, the first to aim at eliciting the student's grasp of his subject, the second to assess his technical knowledge and thus his competence to practise.

THOROUGHNESS

To teach chemistry in preparation for pharmacy and the proper appreciation of metabolism emphasis should be laid on analytical reactions, the law of mass action and its application to hydrogen-ion concentration and pH, and the quantitative aspect of chemical reactions. The reactions of organic "types" and "groups," rather than the preparation and properties of specific compounds, should be taught in preparation for a detailed study of proteins, fats, carbohydrates, purines and those classes of compound of especial importance in medicine. Enzymes and the nature of enzyme action should be briefly taught.

The student should supplement his study of elementary physics by obtaining a practical knowledge of the common applications of electricity, including a thorough understanding of the safety devices which are designed to protect electrical appliances from damage and their users from risk of shock. Such a foundation will enable him to follow with appreciation the experiments which led to the discovery of X rays, and to profit from a preliminary exposition of the principles of the radiological equipment encountered later in hospital.

Our teacher in biology suggests that the types suitable for illustration of most of the biology principles would be the mosquito, earthworm, skate, frog and rabbit. Classes of applied anatomy and physiology, the study of the living subject and of X-ray appearances, and observation of the abnormalities produced by disease appear to be essential if the student is to correlate human structure and function.

To induce Edinburgh students to keep abreast of advances in therapy the Royal Medical Society, by weekly discussion and the provision of library and medical magazine facilities, does much in this direction. In Edinburgh there is a system of dispensary practice whereby senior medical students are out on their own in the various districts attending the sick poor, and call in the physician in charge of the dispensary in cases of difficulty. This is an extremely valuable thing and might well be copied in other medical schools. The lecturer in public health, a former medical officer of health of Edinburgh, is able to show to his students the practical working of the public health services in the city.

Improvement of examinations is a difficult matter. Some students are cool and collected in examinations while others are flustered and mentally paralysed, but a recognition by the examiner of the abnormal mental condition of the student can be made a factor in alleviating or modifying a student's perturbation.

RESILIENCE

I want the whole of the medical student's course *directed* from the start, and I think this might be done without departing from its cultural breadth. The process begins when schoolmasters are advising parents and children on careers, having regard to their intelligence and aptitudes. At least two of the sciences should come into matric.

In both zoology and botany much attention should be paid to the structure, function and differentiation of cells. Experiments in physics should have relation to radiography, to the passage of fluids in tubes (blood-vascular system) and to conductivity, drawing a comparison between a wire and a nerve. Organic chemistry should be taught in more detail, while some inorganic chemistry, not related to medical students' work, should be omitted. Chemistry should lead on to interest in synthesis even of vitamins and sulphonamides. Pharmacy and metabolism are best associated by linking teaching in these subjects with the teaching of organic chemistry.

Anatomy and physiology should be approached from the outside through study of the human model by the use of X rays, and the student should become acquainted with the normal heart and lungs and should learn the use of the various scopes. Physiology can teach the normal behaviour of muscles, vessels and nerves. So much that might come under anatomy and physiology has to be taught with the clinical subjects. Normal biochemistry and biophysics are part of physiology. Structure and function should not be divorced under two professors. I would welcome a professor of human biology. What a meaningless maze the nervous system is when instruction on structure and function are dissociated. It should be *human* anatomy and *human* physiology, and these subjects should be taught by medical men who have had experience of what is required from a doctor. The teaching should be as applied as possible. Clinical teachers should be associated with the teaching and there should be an overlap of the early clinical studies with anatomy and physiology. I do not think any teaching should be in the air, and do not like the students to say "What is the good of this to me?" and "I wish I could get it over." All medical students should be interested in what they are learning from the start, and should be stimulated to a constant curiosity and state of inquiry. I would like the whole course to be carried out by one corporate body of teachers discussing together, and interested in, the training of the medical student. I am against teaching the preliminary sciences in schools and in institutions dissociated from hospital and clinical work, one thing must be always leading to another. For example morbid histology should not be separated from the teaching of normal histology, and human tissues should be used for the latter. There is much to be said for the anatomy teacher being a surgeon and the physiology teacher a physician, again the old-fashioned idea. I do not like a professor of physiology asserting that his is a great scientific subject which others might learn without passing on to clinical medicine; as a matter of fact this hardly ever occurs. Advances in therapy with us appear in the pharmacology course, and our professor of pharmacology is associated with clinical studies.

In regard to the clinical course, it is impossible to cover everything and there must be some selection; early diagnosis is important, also children's diseases and child care. Train the students to be good general practitioners. Training as specialists must be postgraduate. In common I imagine, with other schools we are not able, with the already overcrowded curriculum, to place students for training in general practice. They see something of the problems of general practice in large outpatient departments. In my own large one they hear the letters dictated to doctors.

All our clinical teachers have been incited to introduce preventive medicine into their curriculum. I always try to teach prevention by going into causation. For example I will talk about the causation of appendicitis and of peptic ulcer. Social medicine must extend, and the professor of preventive medicine will become professor of social medicine. Social medicine relates both to the individual and to his environment. Apart from what is done already, I would stress the care of children of preschool age, in nursery schools and elsewhere. Much illness might be prevented which occurs in school life later. Look after the teeth and throat; attend to diet to avoid rickets. There is much to be said for annual physical assessment of the individual even from early in life. We have started it with our medical students, including X-ray examination. The doctor must have a far greater hand than at present in housing, feeding, clothing, town and country planning, recreation, industrial medical problems, and much else

As long as the main demand of the public is for curative medicine the student must be trained to supply it A different education of the student means a different education of the public, and public education in social medicine must be carried out by doctors They must learn to teach the public and must intrude into such educational fields as the Workers' Educational Association, university extension lectures, and instruction arranged by local authorities The medical student, and particularly the postgraduate student, must be taught how to teach the public In these and other ways we may in time get a different public demand

UNITY IN TRINITY

In this school there is close cooperation between the professors of physiology and biochemistry on the one hand and the professor of anatomy on the other and therefore the divorce referred to as existing elsewhere is here replaced by a happy union We also have close cooperation between the professor of chemistry and our professor of biochemistry, himself a distinguished chemist If I had my way in the medical curriculum I would reduce the number of lectures, certainly the number of compulsory lectures, in this age of abundant books, but would insist on regular attendance at all practical courses To light in newly qualified men the impulse to keep abreast of advances in therapy, I can think of nothing better than that you should present each one with a free copy of the *Lancet* weekly After a year or more each practitioner would doubtless become a subscriber

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Medical Schools

The earthquake which tossed our medical schools here and there in 1939-40 has had the usual fate of earthquakes it has lost its news value and become merely an episode which man and nature between them have turned to good account Most of the medical schools are now running sweetly, as the engineers say, in the surroundings to which war has brought them, and there is little to add to the story which we told last year The customary survey may thus be curtailed in favour of other matter more immediately interesting

At Oxford University there has been no important change After completing their premedical and preclinical courses students can still take their full clinical course at the Radcliffe Infirmary There are now 170 students doing different parts of their clinical work, and the quota allows the yearly admission of 71 new students to the medical school—64 men and 7 women Any vacancies left by the men may be taken by women Details of the preclinical course may be had from the Acting-Dean of the Medical School, University Museum, Oxford, and of the clinical courses from the Clinical Sub-Dean, at the Radcliffe Infirmary The diploma in ophthalmology is being granted as usual and information about the course for it can be obtained from the Reader in Ophthalmology, at the Oxford Eye Hospital in Walton Street There is no dental school in the university

Cambridge University, too, has seen no cause to change its war-time pattern for medical students, except that the first examination—in chemistry, physics, botany and zoology, and organic chemistry—is being held in full four times a year, which gives the premedical student little excuse for dawdling over any part of it Students take finals after spending two years and nine months in one of the teaching hospitals outside Cambridge —though senior students can receive some instruction at Addenbrooke's Hospital before they qualify if they wish The last examination for the diploma in medical radiology and electrology is to be held in October, after which the diploma will no longer be given Cambridge provided 5 Rockefeller students, 2 of whom have sent us their impressions Particulars of admission to the medical school may be obtained from the Registrary, University Registry, Cambridge There is no dental school in the university.

London University offers preclinical courses at King's College, University College and Queen Mary College Students usually complete their clinical work at one of the London teaching hospitals In order to help students to qualify quickly an additional second examination (anatomy and physiology, organic chemistry, biochemistry and pharmacology) is being held in November this year, and the final examination is now held in October and April (instead of November and May) The final surgery examination is now to consist of a three hour paper, a clinical examination, and orals in surgical pathology and surgical anatomy and appliances Examination fees paid by students who are prevented from sitting by national service are to be returned in full The examination for the diploma in clinical pathology which should have been held in October, 1942, has been postponed until January, 1943 The university also offers diplomas in bacteriology, dietetics, medical radiology, public health, and psychological medicine The courses in bacteriology and public health are suspended during the war There have been 3594 students in the medical faculty during the year Present regulations for medical examinations may be obtained from the Principal, at Richmond College, Surrey Dental students attend the Royal Dental Hospital of the London School of Dental Surgery at 32, Leicester Square, London, W C 2 Students are prepared for the BDS degree, and the university also offers a licensing diploma Particulars of the course may be had from the Dean

King's College is the largest preclinical school in London, and has to limit the number of entries admitted each year to 120 It takes most of the preclinical students of Charing Cross, King's College Hospital, St George's and Westminster Since the beginning of the war, the medical faculty has spent one year in the University of Glasgow and two at the new medical school of the University of Birmingham In both universities it has been possible to carry out the work of the medical departments successfully and as independently as in London It has now been decided however that the faculty should return to London, and next session begins at King's College, Strand, on Sept 22 when the present generation of first and second year students will come as strangers into their own spacious laboratories, lecture theatres and dissecting rooms Queen Mary College, which is housed at King's College, Cambridge, takes preclinical students from the London Hospital and elsewhere, during the year there were 30 taking anatomy and physiology, and 14 the premedical courses University College provides the preclinical courses for most of the students of University College Hospital Those taking premedical courses in biology, physics and chemistry are working at Bangor; the second year students, doing anatomy and physiology, are at Leatherhead The close contact between staff and students who live in the same buildings has been a great success, and the advantages are perhaps reflected in the fact that three University College men were chosen to hold Rockefeller studentships (one of whom has contributed to our collection of letters from those argonauts)

The London Schools

St Bartholomew's Hospital reports no great changes The preclinical students are still welcomed at Cambridge and are completing full courses there In London and the sector hospitals clinical teaching has gone on as usual

The clinical students of Charing Cross Hospital are still at Chauldon House, Boxmoor, there are quarters for 60 of them there, and they share dining, recreation and common rooms, as well as silence and reading rooms and a pathology laboratory Owing to war-time demands on staff the medical and surgical firms have been reduced from six to four, and the beds available to each firm have increased proportionately, students work as clerks and dressers at Ashridge hospital where, with 1200 beds at their disposal, they have first-class clinical experience For clerkships in special departments they attend the parent hospital, Ashridge and Stanmore Hospitals, Redhill County Hospital and others Midwifery experience is gained at Edgware In their final year they are posted by rota to live in at Charing Cross or Ashridge as emergency dressers, and during this time they become perfect in the technique of blood transfusion.

increased emphasis on social, preventive and industrial medicine without a corresponding whittling down of the time allotted to other branches of study is congesting the already crowded curriculum, especially since the clinical period was shortened Resident appointments are plentiful since some of the sector hospitals must be supplied, as well as Charing Cross

ST GEORGE'S has more to report than most of its fellow teaching hospitals There has been a return to London Routine practical classes in pathology, bacteriology and biochemistry were already being held at the parent hospital at the beginning of the year, but second year clinical students continued to work at the West Middlesex Hospital up to May 1 after which they returned to St George's for all courses except midwifery; these continue to be given, by courtesy of the Middlesex County Council, at the West Middlesex Patients have been increasing at Hyde Park Corner during the year and the students have thus had plenty of experience; but lest there should be a return of heavy raids to empty London again, the hospital has provided its convalescent home at Wimbledon with modern equipment, and 120 beds will be available there for teaching if they are needed. The medical school has rented a country house near by which is already fitted to serve as an emergency medical school with laboratories If all is quiet the Wimbledon establishment will be used merely as an annexe In either case the students will be provided with good libraries, museum and canteen, and plenty of clinical experience. The Wimbledon site has the advantage of twenty-three acres of wooded parkland on a southern slope, in easy reach of transport to town

At GUY'S HOSPITAL everything has been going well The preclinical students are still working at Tunbridge Wells, and their examination results have testified to the benefits of a country life The classrooms and laboratories are within easy cycling distance of each other, so that no transport problems arise, and students enjoy something like the atmosphere of a university town The clinical students still have the run of the sector hospitals and of Guy's itself The shortage of staff has thrown much work on those who remain, teachers of the preclinical students have been particularly hard pressed because, owing to the small size of classrooms in Tunbridge Wells the courses there have to be duplicated, but they have worked strenuously and keenly to maintain teaching standards Applications here, as elsewhere, are extremely numerous, but the quota maintains admissions at the prewar level

KING'S COLLEGE HOSPITAL has little fresh to report Clinical students still work at Horton Hospital, Leatherhead Emergency Hospital and finally at King's itself. Midwifery experience begins in the hospital lying-in-ward and the neighbouring district, is continued at a borough hospital and completed at a new county hospital This plan is so successful that the medical school authorities hope the principle of access to beds outside London will be perpetuated The diabetic department of the hospital, opened in 1940, is available for teaching and research There is an active dental school

The LONDON HOSPITAL remains the headquarters, but premedical subjects are taught at Queen Mary College now at Cambridge (see above) and the departments of physiology and anatomy are also guests of that university Students attend the annexe at Brentwood as well as the parent hospital for their clinical experience, their pathology course is given by their own teachers at Chase Farm Hospital, Enfield In their second clinical year they may be appointed as student house-officers, at a salary of £50 a year, to the sector hospitals During their final year all students return to the London for ward work and systematic lectures The hospital has its own dental school

The number of students at ST MARY'S HOSPITAL remains stationary, though the excess of applicants over vacancies is larger than before St. Mary's is fortunate in that both school and hospital buildings remain undamaged; but it has been the policy of the school to disperse students to some extent Thus the first year continue to be the guests of Berkhamsted school, while students in their clinical years are still working in the large EMS and Middlesex County Council hospital at Harefield and in three other sector hospitals in addition to St Mary's itself The whole of the second MB course and the latter part of the clinical teaching are carried on at the parent hospital Thus students have the chance to see a large variety of clinical material in the sector, and also to participate in organised student life at St Mary's The Home Guard and athletic clubs have always flourished during the war years, and in the past year the medical society has had an average attendance of over 130 at its meetings and active musical and dramatic societies have also grown up. The large number of resident posts available in the sector continue to provide house appointments for all students on qualification

Preclinical students of the MIDDLESEX HOSPITAL have been working at the University of Leeds, thanks to the kindness of the vice-chancellor, but they are expecting to return to London this autumn The clinical students continue to work at the sector hospitals at Aylesbury, Northwood and Willesden as well as at the Royal Hospital, Wolverhampton, and the Middlesex itself All is going well

The preclinical students of the ROYAL FREE HOSPITAL (London School of Medicine for Women) are still working at the University College of the South West, in Exeter, and will not be returning to London for the present The work at Arlesey has increased and students are getting much more clinical experience than was possible for them a year ago Some midwifery beds have been opened at the Royal Free itself, and students are also getting plenty of cases at Shardeloes, Amersham, at the Mother's Hospital, Clapton, and in Exeter Otherwise there have been no changes since last year

ST THOMAS'S, which perhaps suffered worst of the London teaching hospitals in the raids, has shown her qualities as a phœnix The premedical and preclinical students are at Godalming, where laboratories and classrooms have been set up with the coöperation of Charterhouse School At Hydestile, Godalming, a new St Thomas's has been opened under the direct administration of the governors of the parent hospital, and this is now the chief centre of clinical teaching, which is maintained without a break in traditional high standards. The pathology department has been established in a house in Godalming leased and modified to receive it Since July the final-year students have left the sector hospital at Guildford and returned to St Thomas's in London, where beds are increasing again and outpatient teaching is almost back to normal

At UNIVERSITY COLLEGE HOSPITAL experience has confirmed the wisdom of concentrating the students in few centres At the beginning of the war they were distributed in small groups in the various hospitals of sector IV. This was not satisfactory, and every successive step in concentration has brought an improvement in education By grouping students together it is possible to make better use of trained teachers, to coordinate clinical teaching with teaching in other subjects, such as clinical pathology, and to concentrate libraries, museums and laboratories, and it has also been found to foster community learning among the students themselves An experiment in teaching is being made at Leavesden It seems that students approach their cases prejudiced by the category in which they find them placed thus they may imagine there are "surgical" peptic ulcers and "medical" peptic ulcers, which need different treatment To overcome this artificial approach the medical and surgical units are combining as one firm, and students appointed to it clerk for all types of patient and are taught by both the medical and surgical chiefs Clinical experience is gained at Leavesden, at Stanboroughs Hydro, Watford, and at University College Hospital itself There is a dental school

The WEST LONDON HOSPITAL school gives preference to women students reading for the London University medical degrees but other students are accepted when vacancies are available During the first two years of the war the number of entries fell but they have now increased and at present the school cannot accept all the students who apply The standard of the students is very high, only about 10% of applicants being ultimately selected As the hospital has suffered no damage from enemy action it has not been necessary to make use of the sector hospitals, and teaching is still to be carried out at the West London, with the exception of practical obstetrics which is taught at one of the maternity units of the Middlesex County Council House appointments are available for students on qualification but the reduction in resident staff required by the authorities has meant that fewer of these posts will be available during the coming year In spite of further depletion of the honorary staff to satisfy the increasing needs of the Services, the teaching in all departments is satisfactory during the past year

Westminster has carried on with absolutely no alteration in the position established twelve months ago The hospital is full to capacity and many applicants have to be refused Arrangements for clinical teaching at Staines and Ripley and at Westminster itself have been maintained though the loss of teachers to the Services has meant a heavy strain on those who are left The examination results, however, have shown it to be worth it

The School of Dentistry of the Royal Dental Hospital of London admits students who have passed their premedical examination in zoology, botany, physics and chemistry They take courses in dental mechanics, metallurgy and special anatomy for the first two years, and during this time they also normally study general anatomy and physiology at King's College , at present, since King's is out of London, the anatomy and physiology courses are being held at the Royal Free Hospital, but with the return of King's to town this autumn presumably the old plan will be resumed For general medicine and surgery the students attend clinics at Charing Cross Hospital There are also dental schools at Guy's, University College Hospital, King's College Hospital and the London, but the other London teaching schools offer no organised teaching for dental students , medical students of those schools, however, who wished to study dentistry could of course be credited with the general courses they had taken there

Other English Schools

The University of Durham has not been called upon to meet any new problems in medical education during the past year The medical school of the university is at King's College, Newcastle-on-Tyne, and fortunately work has continued there without interruption There have been no changes in the regulations governing medical degrees The university offers a diploma in public health but no course will be held during the coming academic year unless a minimum of 6 candidates enter No course has been held for the diploma in psychological medicine for some time, and the university offers no other diplomas There is a school of dental surgery preparing students for the usual degrees , some alterations have been made, during the year, in the course for the degree of bachelor in dental surgery, making it more comprehensive and in line with modern teaching Particulars of medical and dental courses may be had from the Dean of Medicine, The Medical School, King's College, Newcastle-on-Tyne

The Birmingham University * medical school has also escaped any serious disturbance Clinical teaching goes on at the two branches of the Birmingham United Hospital—the General and the Queen Elizabeth Hospitals The Queen's Hospital, which had been an integral part of the medical school for a hundred years, has now become the Birmingham Accident Hospital in charge of a director and a whole-time staff , it accepts only fractures and other injuries, and, being still an associated hospital of the medical school, offers teaching to students A reader in pharmacology has been added to the staff of the school during the year As a war-time measure associated with the EMS, a thoracic surgical unit has been formed at the Queen Elizabeth Hospital, and this, it is hoped, will become permanent Short courses of lectures on medical problems in industry have been arranged for industrial medical officers and nurses, and in addition the university grants a certificate to state registered nurses who have attended a course of instruction in the subject in conjunction with their work at the Accident Hospital The work of the dental school is unaffected, and there have been no changes in regulations governing medical and dental examinations since last year Neither the examination nor the course for the diploma in public health will be held during the war, and the university grants no other medical diplomas Particulars of all medical and dental courses are to be had from the Dean of the Medical Faculty, the Medical School, Hospitals Centre, Birmingham 15.

Liverpool University * has carried on with no change since last year A vacation term is now held during the long vacation for students about to begin their final year , this enables them to complete their statutory classes so that during their final year they can take resident posts in hospitals The school of dentistry is working as usual, and there have been no changes in the regulations governing medical or dental examinations The courses and examinations for the diplomas in medical radiology and electrology, and in public health are at present suspended The courses for the diplomas in tropical medicine and tropical hygiene will be held if possible and an announcement about them will be made later Information about medical and dental courses may be sought from the Dean of the Faculty of Medicine, University of Liverpool

At Manchester University * there are few important developments to chronicle Students who have completed all their appointments are allowed to sit for the final six months earlier than was formerly possible, but the university teachers are resolved that there shall be no lowering in the pass standard Students have the option of living in the medical hostel, Lister House, which adjoins the Royal Infirmary and life there seems to be busy and happy The heads of departments have formed a curriculum committee which has had several meetings and laid plans for postwar developments Medical inspection of all medical students is to begin as soon as possible, and staff-student meetings continue to be useful Clinical teaching has been modified to allow students to begin work as clerks and dressers as soon as they come into the wards, and to combine their post mortem clerkship with other appointments Final students can now attend other hospitals besides the infirmary, and several new clinical teachers have accordingly been appointed to the university staff Final year students take resident posts as student-locums In July, 33 candidates received the double degree (1 with first-class and 3 with second-class honours), and there were more distinctions than usual in anatomy and physiology , for the second year running a Manchester student won the Hallett prize on the primary fellowship examination With a quota of 67 men and 22 women the medical faculty has to refuse many applicants

At Sheffield University * there have been no material changes, though many ideas for changes are in the air The applicants to the medical school, both men and women, far exceed the number of places available under the Ministry of Health quota There are no university medical diplomas The dental school is continuing work as usual Those seeking further information should apply to the Dean of the Faculty of Medicine, the University, Sheffield 10

At Bristol University there has been little disturbance to serious study from air-raids this year, and work in the medical school has gone on as usual The department of anatomy, which suffered in 1940, has been partly reconstructed and furnished with a new dissecting room Competition for entry has become keener since admissions were limited by quota A new prize in pathology has been founded by Professor and Mrs T F Hewer Amended regulations for the second part of the medical curriculum will come into force next session , these ease things, from the student's point of view, by allowing him to take the second MB examination in two sections—anatomy and physiology in March and pathology and pharmacology in June Formerly he had to take all four subjects together in June The course and examination for the diploma in public health is still in abeyance, and the university offers no other medical diplomas No changes are reported in the dental school Details of the medical and dental courses may be obtained

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* The entrance requirements for the Universities of Manchester Liverpool, Leeds, Sheffield and Birmingham have been modified since the beginning of war , they may be obtained from the Secretary, Joint Matriculation Board, 315, Oxford Road, Manchester The faculty entrance requirements differ in each case from those of the university , they can be obtained from the Dean of the Faculty of Medicine in each university

from the Dean of the Faculty of Medicine, University of Bristol.

At LEEDS UNIVERSITY* the most serious of the many problems of the year has been to reduce the clinical period of teaching from 36 to 30 months without lowering the standard. The first group of students able to take the shortened course are those due, under the old system, to qualify in March, 1944; they will now be able to complete their course by September, 1933. There has been further loss of teachers to the Forces but retired members of the staff have come back to take their places. The university is sorry to lose the preclinical students of the Middlesex Hospital, who return to London with their teachers this autumn. The association between the two medical schools during the past two years has been happy. Work at Leeds has gone on undisturbed, and the numbers seeking admission to the medical school have been greater than ever—far greater than the Government quota permits or the school could accommodate.

Other Schools in the United Kingdom

The WELSH NATIONAL SCHOOL OF MEDICINE has had no reason to change its arrangements since last year. First-year students may attend any one of the four constituent colleges of the university of Wales, but most of them come to Cardiff. As in other schools, candidates exceed the quota, and in fact for next October there are 160 applications for 44 places. Difficulties in teaching due to loss of staff have been overcome wherever possible by arranging for women to replace men. The new pathology institute in the grounds of Cardiff Infirmary is now virtually complete and its work has been much extended, besides serving the infirmary and many other hospitals it undertakes investigations for private practitioners, and works in close and friendly touch with the EMS laboratories throughout Wales. All work at the institute is associated with teaching; as an example, all local coroner's autopsies are done in the department which is instructive for students. The school has provided senior students as house officers for the infirmary and other hospitals—a plan which is working well. Teaching has been related to war needs, students being specially instructed in the technique of blood transfusion and in field hygiene and sanitation. At the request of the Government and with the approval of the GMC, efforts are being made to shorten the clinical curriculum without lessening its content. There have been no changes so far in the conduct of examinations, however. Courses and examinations for the diploma in public health have been held this year but courses for the diploma in tuberculous diseases have been suspended for the time being. The university awards no other medical diplomas, and there is no dental school. Details of medical degrees and courses may be had from the Provost, Welsh National School of Medicine, Cardiff.

At ABERDEEN UNIVERSITY the curriculum has been accelerated for the present fourth-year students graduating in 1943. The thirteenth term of their course is being held during this summer vacation; it began on July 21 and ends on Sept. 25. The work of the fourteenth, fifteenth and sixteenth terms will be done during the winter, spring and summer terms of 1942–43, and the work of the seventeenth, final, term during the summer vacation of 1943. The courses for the diploma in public health have been discontinued during the war, and the university grants no other diplomas. There is little else to report in the way of change. The new hall of residence was opened last October and is much appreciated and residence is now compulsory for all students in their final year. There is no dental school. Information about medical courses may be had from the Dean of the Faculty of Medicine Aberdeen University.

At EDINBURGH UNIVERSITY there has been a striking educational advance in that the subject of psychiatry is now to be included in the final examination as a separate subject. Edinburgh is the first of the British universities to take this step. The courses and examinations for the diplomas in psychiatry, medical radiology, tropical medicine and hygiene and public health are being held as usual. The university grants no other diplomas, and there is no dental school. So far the war has not seriously affected the medical degree courses, and in spite of depleted staff it has been possible to maintain teaching at prewar levels. Details of medical courses can be obtained from the Dean of the Faculty of Medicine University of Edinburgh.

SURGEONS' HALL the School of Medicine of the Royal Colleges of Edinburgh, holds no professional examinations of its own, but prepares students for the degrees of Edinburgh, London and other universities, or more commonly for the qualifying examinations of the English, Irish or Scottish Conjoint Boards. Systematic classes are held in Surgeon's Hall and the New School, and clinical teaching is provided mainly at the Royal Infirmary. Particulars are to be had from the Dean, Surgeons' Hall, Edinburgh.

At GLASGOW UNIVERSITY it has been possible to continue medical teaching on normal lines. Many of the younger teachers are on active service, and those who remain are adding part-time national service of some kind to their teaching duties. Patients in the hospitals are somewhat fewer, but numbers have been adequate for teaching and it has not been necessary to discontinue any special courses. First second and third year students are required to serve in the Senior Training Corps but matters have been so arranged that any notable interference with study is avoided. They also undertake fire watching in the university. The senior students have been serving as clinical clerks in the EMS during vacations and have also been appointed in increasing numbers as unqualified residents in teaching and other hospitals. At present there are 1070 students in the medical school, of whom about a fifth are women. There are no dental students in the university. The diploma in public health is being offered as usual, and has been transferred from the Faculty of Science to the Faculty of Medicine. The university caters not only for undergraduate instruction but for higher study and research. Details of medical courses are to be had from the Dean of the Faculty of Medicine, University of Glasgow.

ANDERSON COLLEGE and ST MUNGO'S COLLEGE have separate foundations from Glasgow University. Anderson College receives about 700 students a year; courses are given in all preclinical subjects, and clinical training is given at all the hospitals open to university students. The course prepares candidates for the examinations of all the licensing boards and for the university examinations of London Edinburgh, Glasgow and Durham, provided the matriculation requirements of each are met. Particulars of courses may be had from the Dean, Anderson College of Medicine Dunbarton-road, Glasgow. St Mungo's College is the medical school of Glasgow Royal Infirmary, in the grounds of which it stands. It takes 300 students, preclinical courses being given in the college and clinical training in the wards of the infirmary and the special hospitals of the city. Students are prepared for the examinations of the licensing boards and for the examinations of the universities, provided matriculation requirements are met. Further information may be had from the Dean, St Mungo's College Medical School, 86, Castle Street, Glasgow.

There have been few changes at ST ANDREWS UNIVERSITY. Under the quota, 44 men and 21 women can be admitted yearly; applications are much in excess of this, and selection has been difficult. Membership of the Senior Training Corps is now compulsory, but it has been possible to avoid interference with teaching by instituting periods of full-time STC training at the beginning of each term. Courses and examinations for the diploma in public health are suspended for the present and the university offers no other medical diplomas. The work of the dental school has been uninterrupted. Particulars of medical and dental courses may be had from the Dean of the Medical Faculty, University of St Andrews, Dundee.

Despite the fact that Northern Ireland is not included in the conscription, the main difficulty of QUEEN'S UNIVERSITY OF BELFAST has been the absence of many younger members of the staff on war service; nor have the students been behindhand in joining the Forces. The older teachers, including some of those who had retired, have taken on the extra work. The medical school takes more than 600 students and offers a six-year course. The dental school is working as usual. Full information may be had from the Secretary, Queen's University Belfast.

At DUBLIN UNIVERSITY—Trinity College—all goes well There have been no changes in the medical course during the past year, and the courses and examinations for the diplomas in gynæcology and obstetrics, and psychological medicine are being held as usual The courses and examinations for the diploma in public health have been suspended during the war The university grants no other medical diplomas The dental school is unaffected Information about medical and dental courses may be had from the Dean, Trinity College, Dublin The SCHOOLS OF SURGERY, including Carmichael and Ledwich Schools, are attached by charter to the Royal College of Surgeons in Ireland They are carried on within the college buildings at St Stephen's Green, and are supervised by the council of the college Lectures and courses may be attended by medical students who are otherwise unconnected with the college, and women students are admitted Particulars of the courses may be obtained from the Registrar, Royal College of Surgeons in Ireland, Dublin

In the three colleges of the NATIONAL UNIVERSITY OF IRELAND—University Colleges of Dublin, Cork and Galway—the war has had no serious effect The Dean of University College, Galway, writes that as in other colleges of the university his students are giving help as volunteers in the medical services, but these duties have not interfered with their attendances at lectures or with examination results There are dental schools at Dublin and Cork but not at Galway Regulations governing medical and dental examinations and courses are unchanged and may be obtained from the Registrar, National University of Ireland, 49, Merrion Square, Dublin

Degrees and Diplomas

EXAMINING BOARDS

English, Scottish and Irish Conjoint Boards

The Examining Board in England of the Royal College of Physicians of London and the Royal College of Surgeons of England examines candidates for the qualifying diplomas of M R C S, L R C P Candidates satisfying the board's regulations in regard to the preliminary examination in general education, are eligible for admission to the premedical examination in chemistry, physics and biology, and are required to complete the professional curriculum subsequently at a recognised medical school As an emergency measure the length of the course has been reduced from 57 to 54 months and candidates are now admissible to the last subject of the final examination after 30 months of clinical study instead of 33 The regulation permitting a candidate to enter for one part of the final after 24 months of clinical study is not affected Some other war-time concessions have been authorised in the regulations for example, clinical study may be undertaken at any hospital provided the dean of the candidate's school is satisfied as to the instruction available and signs the certificate of study Other modifications will be found in the Emergency Regulations which have been published and are to remain in force until the beginning of the academic year following the termination of the war Copies of these regulations, and a calendar showing the dates of examinations, may be obtained, free of charge, from the Secretary to the Examining Board in England, the Examination Hall, Queen Square, London, W C 1

The Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow have an arrangement by which, after one series of examinations, held in Edinburgh, or Glasgow, or both, the student may obtain the diplomas—designated by the letters L R C P E, L R C S E, L R F P S G—of all three bodies Candidates may work for the examination of the Scottish Conjoint Board at any of the recognised medical schools of Great Britain and Ireland In 1938 the Triple Qualification committee of management adopted the suggestions of the General Medical Council for an extended medical curriculum, under which the course was to consist of a year of premedical work followed by a five-year medical course, but the committee have reverted to the 1937 regulations as a temporary war measure Under these, the course lasts only five years and includes, in addition to the pre-registration examination, four professional examinations the premedical examination (biology, chemistry and physics), the second examination in anatomy and embryology, physiology, biochemistry and biophysics, the third in pathology and bacteriology, and pharmacology, and the final in medicine, surgery, midwifery, medical jurisprudence and public health Details may be had from the Registrar, 18, Nicolson Street, Edinburgh

The Conjoint Board of the Royal College of Physicians of Ireland and Royal College of Surgeons in Ireland accept candidates for the L R C P I and L M, L R C S I and L M from most of the recognised medical schools at home and abroad There have been no changes in the regulations since the outbreak of war Full details can be obtained from the Registrar, Royal College of Surgeons in Ireland, Dublin

Apothecaries' Licences

The Society of Apothecaries of London grants the L M S S A Lond to candidates who pass in the primary examination (which is held quarterly) and the final examination Final examinations are held monthly except in September The minimum period of study is normally 5 years, but as a war-time measure candidates will be allowed to sit for the primary examination in anatomy and physiology after 46 weeks' study, provided that this covers a period of not less than 15 months, that is to say, the candidate can sit after four terms work instead of five, and this will save him a term on the whole course The three parts of the final examination may be taken together or in any order Further information may be obtained from the Registrar, Apothecaries' Hall, Black Friars Lane, E C 4

The Apothecaries' Hall of Ireland grants the L A H, Dubl to students who pass the three professional examinations No changes have been made in the regulations, which can be obtained from the Registrar, 95, Merrion Square, Dublin

UNIVERSITY DEGREES

Bachelor of Medicine and Surgery

All the universities in the United Kingdom offer baccalaureate degrees in medicine and surgery, conferred on the results of examination

HIGHER QUALIFICATIONS

Those who have graduated in medicine and surgery are at liberty to seek higher qualifications if they wish

Doctor of Medicine and Master of Surgery

Graduates holding a bachelor's degrees can take the degree of Doctor of Medicine or Master of Surgery All the universities in Great Britain and Ireland confer such degrees The requirements vary and can be obtained from the different universities At the University of Durham the degree of Doctor of Surgery (D Ch) is offered in addition to degree of Master of Surgery (M S)

Master in the Science of Obstetrics and Master of Midwifery

The Irish universities grant the degree M A O The Society of Apothecaries of London offers Mastery of Midwifery (M M S A) The degree is given on the results of an examination, the requirements for which can be obtained from the Registrar, Apothecaries' Hall, Black Friars Lane, E C 4

MEMBERSHIP AND FELLOWSHIP

The Royal College of Physicians of London confers the Membership (M R C P) which is obtained by examination and the Fellowship (F R C P) which is an honorary distinction Medical graduates over the age of 23 are at liberty to enter for the Membership examination, details of which can be obtained from the Secretary, Royal College of Physicians, Pall Mall East, London, S W 1

Fellows are selected annually, from the ranks of members, by the council of the college

The Royal College of Surgeons of England grants a Fellowship to Members or to graduates of recognised universities who pass the primary and final F R C S examinations Candidates for the final examination who, owing to war work, have been unable to comply with the regulation that requires six months' residence as house surgeon in a recognised hospital may, if they can produce certificates showing comparable experience ther in the Services or in the EMS, apply for special onsideration There are no other war-time concessions n the regulations, copies of which may be obtained from he Director of Examinations, the Examination Hall, Queen Square, London, W C 1

Medical graduates who have been registered or eligible or registration, for at least three years may apply for xamination for Membership of the Royal College of Obstetricians and Gynæcologists (M R C O G) Pariculars of the regulations may be obtained from the Secretary, Royal College of Obstetricians and Gynæcologists, 58, Queen Anne Street, London, W 1

The Fellowship (F R C O G) is granted to Members who are judged to have advanced the science and art of obstetrics and gynæcology.

Graduates may become Members of the Royal College of Physicians of Edinburgh (M R C P E) on passing an examination, particulars of which may be obtained from the Secretary, 9, Queen Street, Edinburgh 2

The Fellows are selected annually from among the Members by the council of the college, and receive the degree of F R C P E

Fellowship of the Royal College of Surgeons of Edinburgh (F R C S E) is granted to medical graduates who pass the required examination, particulars of the regulations may be obtained from the Clerk of the College, Surgeons Hall, 18, Nicolson Street, Edinburgh

The Royal Faculty of Physicians and Surgeons of Glasgow grants, after examination, a Fellowship which is registrable by the General Medical Council as an additional qualification (R F P S G). The candidate is examined in either medicine or surgery, as he chooses, and in an additional subject selected from a list of seventeen Those who pass the examination are eligible for election to Fellowship by ballot. The faculty may also elect without examination three candidates yearly who have been qualified at least twenty years, have reached the age of forty-five, and whose professional status is of a high order, and two others of high professional standing who have not reached the age of forty-five Details may be had from the Secretary to the Faculty 242 St Vincent Street Glasgow, C2

Membership of the Royal College of Physicians of Ireland (M R C P I) is granted on the result of an examination, the details of which may be obtained from the Registrar of the College, 6, Kildare Street, Dublin

Fellows are elected by ballot, and receive the degree of F R C P I

Graduates seeking the Fellowship of the Royal College of Surgeons in Ireland (F R C S I) must pass in two examinations, a primary in anatomy and physiology and a final in surgery Further particulars may be obtained from the Registrar, the Royal College of Surgeons in Ireland, Dublin

The Faculty of Radiologists offers a Fellowship (F.F R) to medical graduates of five years standing who have spent at least one year in general clinical work at an approved hospital, have practised radiology exclusively for three years and have held a radiological diploma for at least two years Candidates are required to pass an examination and submit a thesis Candidates who hold higher medical or surgical qualifications may be exempted from the examinations in general medicine, general surgery or pathology Full particulars may be obtained from the Warden, the Faculty of Radiologists, 32, Welbeck Street, London, W 1

SPECIAL DEGREES AND DIPLOMAS

The regulations for the following diplomas can be obtained by applying to the examining bodies concerned

Public Health

A diploma in public health (D P H) is granted by the English and Scottish Conjoint Boards and, usually, by all the universities of the United Kingdom except Oxford, Cambridge and Sheffield The diplomas in public health usually granted by the Universities of Manchester and Bristol and the Irish Conjoint Board are at present in abeyance, and the D P H courses at the Universities of London, Birmingham, Bristol, Liverpool, Leeds, Aberdeen, St Andrews and Trinity College, Dublin, and the course at the London School of Hygiene and Tropical Medicine have been suspended The courses at Leeds and Durham will be held if sufficient candidates apply, and the Universities of Edinburgh, Glasgow, Belfast, and the three Colleges of the University of Ireland, at Dublin, Cork and Galway, are still holding courses; there is also a course at the Royal Institute of Public Health and Hygiene Durham, in addition to the diploma in public health offers the degree of bachelor of hygiene to medical graduates of any approved university who attend courses for part I of the examination at Durham; the degree of doctor of hygiene is conferred on those holding the B Hy who submit an approved thesis and pass in an oral examination

Psychological Medicine

The Universities of London, Durham Edinburgh, Dublin, Ireland (National University), Belfast (Queen's University), and the English and Irish Conjoint Boards grant diplomas in psychological medicine In addition to a D P M the University of London grants a diploma in psychology, taken chiefly by social workers, the course for which is being held at the London School of Hygiene and Tropical Medicine The courses and examinations for the diplomas usually granted by the Universities of Leeds and Manchester are at present suspended A D P M course is held annually at the Maudsley Hospital in the early months of the year Information can be obtained from the Honorary Director of the Medical School, Central Pathological Laboratory, West Park Hospital, Epsom, Surrey

Radiology

The Faculty of Radiologists grants a Fellowship (F.F R) which has already been mentioned The diploma of Cambridge (D M R E) will be discontinued after Oct 31, 1942 The Universities of London Liverpool and Edinburgh also grant diplomas (D M R) and the English Conjoint grants the D M R R C P & S Courses for the diploma at Liverpool University are at present suspended

Tropical Medicine

Liverpool University grants a diploma in tropical medicine (D T M) and tropical hygiene (D T H) and the University of Edinburgh and the English Conjoint Board each grant a diploma in tropical medicine and hygiene (D T M & H) Examinations for the English Conjoint D T M & H have been cancelled until further notice

Gynæcology and Obstetrics

The Royal College of Obstetricians and Gynæcologists grants a diploma (D R C O G) to practitioners who have had special postgraduate experience in obstetrics, they are required to submit case-records and commentaries, not less than 9 weeks and not more than 3 years before the date fixed for the examination. If these records are accepted the candidate is allowed to take the examination if not, he may be required to submit a new set of records or to modify the original set before he can be examined The University of Dublin also offers a diploma (D G O) for which a course is held at Trinity College and the Rotunda Hospital The degree of M M S A granted by the Society of Apothecaries of London has already been mentioned

Ophthalmology

Three examining bodies issue diplomas in ophthalmology—the University of Oxford (granting the D O), the English Conjoint Board (granting the D O M S) and the Irish Conjoint Board (granting the D O.M S R C.P and S I)

Laryngology and Otology

The English Conjoint Board offers a diploma (D L O.) for those who have made a special study of the ear, nose, pharynx and larynx

Anæsthetics

The English Conjoint Board also offers a diploma in anæsthetics (D A) Candidates must have special experience in giving anæsthetics The Irish Conjoint Board has also established a diploma in anæsthetics the first examination for which will be held next December

Child Health

Diplomas in child health (D C H) are granted by the English and Irish Conjoint Boards

Tuberculous Diseases

The University of Wales grants a diploma in tuberculous diseases (T D D) but courses of instruction are at present suspended

Bacteriology

Diplomas in bacteriology are ordinarily granted by the Universities of London and Manchester The course for the London University examination would normally be held at the London School of Hygiene and Tropical Medicine, but has been suspended during the war At Manchester both the course and the examination have been suspended

Clinical Pathology

The University of London offers a diploma in clinical pathology (D C P) A year's course of study is required

Dental Degrees and Diplomas

There are schools of dentistry at the universities of London Durham, Birmingham, Liverpool, Manchester, Leeds, Sheffield, Bristol, St Andrews Belfast and Dublin and at University Colleges of Dublin and Cork in the University of Ireland Leeds grants a diploma (L D S), a baccalaureate degree (B Ch D) and a mastership (M Ch D) London grants a B D S in addition to an L D S The University Colleges of Dublin and Cork grant a B D S and an M D S , and Trinity College, Dublin, offers a B Dent Sc and an M Dent Sc All the other universities mentioned offer L D S , B D S and M D S degrees , St Andrews offers a diploma in public dentistry (D P D) in addition

Licences in dentistry are also granted by the Royal Colleges of Surgeons of England and Edinburgh, the Royal Faculty of Physicians and Surgeons of Glasgow, and the Royal College of Surgeons in Ireland

Candidates for the L D S of the Royal College of Surgeons of England are required to pass a preliminary examination in general education, and either the premedical examination in chemistry, physics and biology conducted by the Examining Board in England, or an examination accepted by the board as exempting from this examination The course lasts four years and must be taken at recognised dental schools and hospitals, but candidates who have completed not less than 6 months dental mechanics under a competent dental practitioner may be exempted from 3 of the 20 months instruction in this subject at the dental school Regulations and a calendar showing the dates of the examination may be obtained from the director of examinations, Examination Hall, Queen Square, London, W C 1

Candidates seeking the L D S of the Royal Faculty of Physicians and Surgeons of Glasgow must pass a preliminary examination in general education and another in scientific subjects (physics, chemistry and biology) The professional course lasts four years and must be taken at a recognised dental school There are three professional examinations, the first in human anatomy and physiology, the second in dental metallurgy and in dental mechanics, and the final, part I, in principles of medicine, surgery and therapeutics, general pathology and bacteriology , part II in dental anatomy, physiology, surgery, materia medica, orthodontics, radiology, pathology and bacteriology and operative dental surgery In addition to the L D S the Royal Faculty offers a higher dental diploma (H D D) to registered dentists who have practised for at least 12 months and who pass an examination in dental anatomy and physiology, dental surgery and dental pathology and bacteriology Information about both examinations may be obtained from the secretary to the Faculty, 242, St Vincent Street, Glasgow, C2

Regulations for the L D S of the Royal College of Surgeons in Ireland have been altered the course now lasts for 5 years, and up to the end of the fifth term lectures and examinations are the same as those for medical students taking the examinations of the Irish Conjoint Board In the sixth term dental students attend a dental hospital for an introductory course in dental mechanics, and in their third year they take the same course and examination in pathology as the medical students, and attend lectures and clinical courses at a general hospital in medicine and surgery, sitting for an examination in these subjects which of course differs from that of the medical students Their fourth and fifth years are spent entirely in the dental hospital Details may be obtained from the registrar, Royal College of Surgeons in Ireland, Dublin

THE NEW BMSA

THE medical students of this country sented for many years by a faculty the National Union of Students T had a chequered career but in spite has done good work on behalf of In 1940 the committee became Students Association but remained NUS At this time the BMSA re provincial medical schools, but thirteen London medical schools was requested by the Medical P draw up a report on the reform of and it became obvious that th fully representative Negotiat the schools not yet members of on what basis they would be After many discussions it was that would be most acceptab provincial medical schools woul dent organisation which might general student body through medical profession through the

The inaugural meeting of the the London headquarters of th 28 last, when 17 medical school were represented At the first tion was established and the co approved Forms of agreemen BMA were discussed and the empowered to put these on an

At the second session the im the association was discussed the reform of the medical curric by the end of September and a *to deal with this, and also to provi* views on organisation of the cou departmental committee on medical Ministry of Health has asked the

Most delegates were in favour of t *curriculum as a means of speeding* of doctors, and discussion mainly cen in which the available time could be speakers maintained that in view curriculum not only should experienc reserved from military service but the number of in most medical schools should be increased It w suggested that more use might be made of qualifi women as teachers All were anxious that full use should be made of the teaching material available in municipal hospitals To save time in the course, it was agreed that the long vacation should be abolished in favour of a fully organised fourth term, not merely a revision course, and the delegates wished staff and students to meet in consultation to discuss administration and teaching difficulties raised by shortening the course

Student health was considered In Edinburgh a special ward is open for all students (not medical students only) in which they receive free hospital care , and in addition a special students' insurance scheme has been established Students can register with one of five doctors, and on paying a fee of 10*s* 6*d* per annum become entitled to free medical attention Schemes for providing medical attention for students are also in operation in Cardiff and at Oxford Two delegates held that too much emphasis was being laid on the need of special health schemes for students, but the meeting as a whole considered that medical students, who can always get the very best attention for themselves, have a special responsibility in ensuring that other students have an adequate medical service A special subcommittee was elected to discuss this whole problem with the NUS

The feeling of the meeting was that during the present shortage of doctors more women should be encouraged to enter the medical profession It was pointed out that there are not enough places available in hospitals for the women who have already passed their second examination and that the problem facing these women is urgent At the same time it was realised that concessions obtained in the present emergency were likely to be taken back at the end of the war The meeting approved the principle of admitting women to all medical schools on equal terms with men

THE LANCET

LONDON SATURDAY, AUGUST 29, 1942

The Makings of a Doctor

A composite picture of many independent views expressed elsewhere in this issue

"THERE must be a better way of doing this," AITKEN suggests as a motto for his students "What is it ? Let's try something" Our recipe for making doctors has not worked badly in the past, but now that scientific knowledge has shot ahead of its application to life our medical training is revealed as full of holes There are plenty of excuses, the most notable being that seventy years are not enough to learn even a small subject thoroughly, let alone medicine SHAW has suggested that man should now repent and live to be three hundred, but however willingly we would oblige him we must wait for the endocrinologists to discover the elixir of life In the meantime by practising rigid economy we may be able to use the ordinary span of life and the six years of medical training to better advantage The first thing to realise about the curriculum is that by keeping things in we keep things out Some part or parts of the syllabus have got to dwindle to make room for new matter When it comes to dropping material from a curriculum there is always an outcry, at the outset of a journey it is far easier to decide what to take than what to leave out The present compression of the course as an emergency measure is taxing the wits of deans and vice-chancellors at this moment, they say—and rightly—that everything now taught in the curriculum serves some purpose in making the doctor Naturally Every addition to a man's knowledge helps to make him, and if a medical student studied subjects as remote from the curriculum as pyrotechnics and Sanskrit he would find they had a bearing on medicine, simply because all learning is a part of the same jig-saw It is our misfortune never to see it whole, we must do the best we can In the medical curriculum this surely consists in giving precedence to what is most important There is danger, of course, in being strictly utilitarian, foolishly applied, the principle would narrow the course instead of broadening it into a liberal education

We all agree that our aim is to make a good general practitioner, whose work is founded in scientific method and principle At present the premedical year is largely dedicated to acquirement of such method The preliminary subjects of botany, zoology, physics and chemistry have therefore to be studied in considerable detail, and in consequence the student loses perspective and sees them out of relation to medicine Is there any slack to be taken up here ? Some of the teachers think there is, they feel the time has come to drop botany from the curriculum and substitute a course in biological principles with a bias towards zoology, this might include too the relevant aspects of geology Some of the students think that inorganic chemistry and elementary physics should have been covered at school in the syllabus for higher leaving certificate In Germany before the war no serious attempt was made, it seems, to train the student in scientific method during his preliminary year, he did no practical work in biology or physics, though the chemistry course resembled ours No-one would charge the German medical profession with lack of scientific method, and it seems clear that the necessary experience can be acquired otherwise than through an overloaded and partly irrelevant premedical course There is even the disadvantage in our system that the premedical student may not be able to see the wood for the trees, anxious to satisfy the examiner in details he may overlook principles Nevertheless, method must be acquired sometime, and the earlier the better Is there place here for a practical fusion ? Could the beginner, for example, be introduced to the first principles of physics, as the Scottish students suggest, by way of a study of equipment which he will have to use later ? Suppose, after a simple "popular" explanation of the ophthalmoscope, he began a study of light and optics with a view to understanding how that instrument worked, or, after seeing the electrocardiograph in action, he turned his attention to electricity, and when he understood what he was about was taught to take a cardiogram ? The method savours of the highly practical system of Mr Squeers, but what could be better in medicine ? The boy who learned to spell "winder" and was then sent to wash it was getting just the sort of training the doctor needs In the same way inorganic chemistry could be approached through a study of drugs and poisons, beginning with what they could do to his patients the student would turn to considering where they fitted into the chemical groups and families There could be nothing narrowing about preliminary subjects taught in this way, on the contrary, the student would be constantly led to think of the wide field ahead of him, and would not always be fancying irrelevance in his immediate studies Now he is apt to call them "academic" (not leading to a decision OED), but it is a poor teacher that cannot illumine the student's path with his own vision of its distant goal

There are, indeed, plenty of opportunities for the teaching of scientific method at every stage in medicine, many of which are already well used By bringing the preliminary subjects into closer relationship with medicine as a whole there is little danger of robbing the student of needed experience This first year of the medical course cannot, in any case, be considered apart from ordinary school education, itself due for revision What is mathematics but training in scientific method ? And what should our school years give us but an outline of modern knowledge ? The old-fashioned method has always been to start the child with the elements and let him climb step by step to some understanding of his subject How much more interesting it is for him if he is given a simple picture of what is known about the subject and then is helped to fill in details This is the method advocated by the anatomy teacher who wishes students to begin their course by watching a rapid dissection of the whole body, of the zoologist who wishes them to understand man's place among vertebrates, grasping the principles of body mechanics, development and heredity rather than the detailed differences of species, of the teacher who wishes them to learn human anatomy and human physiology from a man with an understanding of their relation to medicine, so that there will be constant reference to those deviations from the normal which will be seen later in patients There is an increasing conviction, too, that the doctor must study the mind as well as the body that normal psychology must have its place with the study of anatomy and physiology, that psychiatry is one of the more important parts of general medicine Edinburgh has the distinction of being the first to recognise this to the extent of introducing a separate paper on psychiatry into the final examination Finally, the doctor's place in the social structure is becoming more important with the growing interest in preventive and social medicine, and here, it seems, we are short of teachers The establishment at other universities of chairs of social medicine like the one recently founded at Oxford should help to remedy this

No doubt teaching methods could be much improved in every subject, the cinematograph and the X ray deserve a much greater place in our medical schools, students learn more at tutorials than at systematic lectures, and one dean suggests that, since these are more easily arranged in a small school than a large one, more small teaching units should be established in hospitals now without medical schools Again, teaching in different schools appears to be uneven Thus the Scottish students ask for more chance to follow up fatal cases in the post-mortem room and laboratory, to give anæsthetics and to stitch wounds—*experience largely granted in many schools* Students south of the Border, on the other hand, lack the valuable opportunities for dispensary practice available in Scottish schools We must not however overlook the value of local colour and it would spoil one of the most effective stimuli in medical education if each school was not left some freedom to develop along its own lines This is the source alike of esprit de corps and of healthy emulation But whatever occupies the nearer foreground there can be no doubt, as AITKEN foresees, that doctors should take an increasing share in preventing preventable ill health, and they must be properly trained to do it The changes to come are thus a reorienting of the course towards the new demands which people are making on their medical services

AFTER THREE YEARS OF WAR

(*From* THE LANCET *of August* 25, 1917)

dental surgery of the medical students are still sorely depleted,
Information about both exa the same measure as was the
from the secretary to the Faculty, 242, St Vi who, in the
Glasgow, C2 al career are

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The Defence Services

THE Central Medical War Committee of the British Medical Association is responsible for the supply of all doctors for the defence services, and the Central Dental War Committee for the supply of dental surgeons

Royal Naval Medical Service

The usual regulations governing entry of medical and *dental officers to the Royal Naval Medical* Service are suspended during the war and the only medical officers being admitted are those granted temporary commissions in the Royal Naval Volunteer Reserve After the war any vacancies will probably be filled by selection of officers from among those who have served in the RNVR during the war There is still only one woman medical officer in the WRNS She holds the relative rank of a Surgeon Lieutenant, RNVR, and serves as medical superintendent attached to the WRNS headquarters at the Admiralty

Candidates for the Royal Naval Dental Service must be registered under the Medical or Dental Acts and must also have a registrable qualification in dental surgery The position respecting entry is similar to that existing for medical officers

Royal Army Medical Corps

No applications for regular commissions in the RAMC have been invited since the outbreak of war up to the present It is expected when recruitment for regular commissions is proposed, officers who served during the war will be considered first All war-time appointments are emergency commissions for the duration of the war, no short-service appointments are being made at present Recently qualified doctors wishing to be appointed to an emergency commission should apply to the secretary of the Central Medical War Committee at BMA House, or if resident in Scotland to the secretary of the Scottish Central Medical War Committee, 7, Drumsheugh Gardens, Edinburgh 3 Applicants should have held an appointment either as house-surgeon or house-physician for 6 months

Women medical practitioners are required for appointment to commissions in the Women's Forces for employment with the RAMC They are required mainly for general medical duties with the ATS A number have been selected for specialist duties Women must be under 46 and fit for general service Applications must be made through the Central Medical War Committee Applicants should have held an appointment either as house-surgeon or house-physician

ARMY DENTAL CORPS

No applications for regular commissions will be invited during the war, and it is expected that after the war any regular officers required will be made up at first from among those who have served as emergency commissioned officers No short-service appointments are being made at present, and all war-time appointments are for the duration of the war Recently qualified dental surgeons who wish to be appointed to an emergency commission in the ADC should apply to the Central Dental War Committee, 13, Hill Street, London, W 1, or if resident in Scotland to the Scottish Central War Committee, c/o the Department of Health for Scotland, Edinburgh, 1

Royal Air Force Medical Branch

Commissions in the medical branch of the RAF are now given only to those appointed to the Royal Air Force Volunteer Reserve for duration of the war Short service and permanent commissions are at present in
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qualified medical officers are considered for
The feel the medical branch of the Royal Air Force
shortage of g completed six months house appointment in a
to enter th l No appointments to commissions are made
that there ai e Air Ministry, candidates must register
for the women Medical War Committee, which allocates
examination and ew and medical examination at the
is urgent At the sa Air Ministry Entry of doctors
sions obtained in the e Medical Branch of the Royal Air
be taken back at the erve is normally in the rank of
approved the principle esponding to Lieutenant in the
schools on equal term tion to Flight Lieute is auto-

atic after one year's service providing recommendation
the rank is satisfactory There are from time to time
limited number of vacancies open to doctors holding
ecialist qualifications and in selected cases a higher
nk on entry is given Medical officers on entry are
ven a short course of instruction at the Medical Train-
g Establishment and on completion of the course
come available for posting Such postings may be
operational units, training units, recruits centres,
neral hospitals and station hospitals In addition to
dinary general medical work, there are the important
anches of aviation medicine and general preventive
edicine and hygiene Medical officers are encouraged
make a special study of these

There are now 55 women medical officers commissioned
r duty with the RAF as medical officers They are
ainly employed in the care of WAAF personnel

There is a separate dental branch of the RAF, and
ental officers are not appointed to the medical branch
uring the war dental officers are being appointed
rough the Central Dental War Committee, which has
een organised by the British Dental Association
ntry into regular service has been suspended and all
ccepted candidates are at present commissioned in the
AF Volunteer Reserve for the duration of the war

ome Guard

There were Home Guard medical officers, most of hom were also combatants, in the Home Guard from s start, but it was not until April 1941, that official ecognition was accorded to the Home Guard Medical ervice It now consists of a medical adviser at the Var Office, several zone medical advisers responsible or counties, cities, and parts of cities, numerous battalion nedical officers and still more numerous company medical fficers There should also be a medical orderly sergeant n each battalion and a corporal for each platoon, but generally speaking these non-commissioned officers have till to be appointed The services of medical officers are voluntary, they are appointed by commanding officers of battalions with the approval of the local medical war committee which has to be satisfied that their employment will not prejudice the efficiency of civilian medical services It is now widely recognised that the exigencies of invasion might in any case prejudice the efficiency of the civilian services and the approval of the local medical war committee is usually given as a matter of routine The duties of HG medical officers were defined afresh in April, 1942, and are now as follows to act as medical advisers to zone, battalion and company commanders, to give or arrange for lectures on first-aid and hygiene for *all* HG personnel, to train stretcher bearers and medical orderlies, or to arrange for their training by Army medical, ARP or voluntary aid authorities, to carry out such medical examinations of personnel as may be necessary, to make arrangements for evacuation of casualties, to organise casualty collecting posts which should normally be on a basis of not less than one per platoon The interpretation of these duties varies somewhat in different areas but it is of the first importance that MOs should see that every man in the Home Guard knows as much as possible about how to help his wounded comrade, and that he should be able to count upon finding a casualty collecting post within walking distance, no matter in what area he may happen to be wounded In other words, the HGMS must anticipate conditions in which ambulance traffic is impossible and the wounded will have to depend on strictly local assistance

When it comes to examining those who claim to be unfit for service in the Home Guard, the MO has the assistance of certain definite rules, but in this as in other spheres he will do well to remember the words of General Wavell "The general who allows himself to be bound and hampered by regulations is unlikely to win a battle" MOs are likely to be asked by commanding officers what they ought to do about old soldiers who can be of great use in guard and other duties not calling for great mobility although they are technically unfit for HG service owing to some disability, such as lameness The best advice in such cases is that which helps to maintain the morale and defensive powers of the Home Guard

An important duty of MOs is that of keeping in touch with local authorities These authorities have recently been instructed to set up miniature aid posts in private houses These posts are the civilian counterpart of the HG casualty collecting post, and both alike will have to cater for every sort of casualty that may come within their range, whether military, civilian or HG In order to avoid wasteful overlapping, cooperation with the local authority is essential and in many areas a conjoint committee of local authority, HG WVS, and Red Cross representatives has been formed to deal with the whole question The HG medical officer is expected during invasion to allow first claim on his services to any aid post or hospital in whose service he may chance to be If he cannot reach the aid post or hospital, or is not needed there, he is at liberty to report to his battalion headquarters, which means that he will come under the orders of the battalion commander, and will in effect be mustered But there is great official objection to the compulsory mustering of HG medical officers and it is only allowable in very rare instances This may seem to involve a distinction without a difference, but the distinction might prove important if the MO were wounded or killed in the course of his HG duties Whether mustered or not, the Home Guard MO is entitled to wear his uniform (which will be that of a major if he is a battalion medical officer) at all times when he is liable for HG duties This liability would appear to begin when he enrols in the Home Guard but in actual practice uniform is only worn when on duty or in immediate expectation of being called upon for HG duty The uniform is issued without charge and consists of the ordinary battle dress with a Red Cross brassard which may possibly (not certainly) serve as some protection in action The Home Guard MO may not appear to have very extensive duties but when the time comes the battalion or company whose MO has built up an efficient medical service will show higher morale and better capacity for fighting than that in which the MO has not brought real enthusiasm to his job

Health Services at Home

EMERGENCY MEDICAL SERVICE

The medical schools have responded to the suggestion of the General Medical Council that the course should be shortened where this could be done without loss of standard, with the result that unusual numbers of candidates sat for their finals this summer and many more qualified than last year Many of these new members of the profession will be serving in the EMS during their first six months of practice—valuable experience, since the EMS is consolidating into the foundation on which a unified hospital service will be built after the war

The Ministry of Health announcement (circ 2660) that the rate of recruitment of doctors to the Forces will be speeded up during the next few months has changed the prospects of newly qualified men in some ways Thus, until further notice, all men who are fit for military service and who hold A posts in hospitals (junior whole-time resident posts for which no previous experience is required) will be recruited at the end of their six months period of office in the post Men holding B2 posts (junior whole-time posts, not necessarily resident, for which previous experience is required) will also, if fit for service, be recruited at the end of six months Since it will no longer be possible to fill B2 posts by men who have just come to the end of an A appointment B2 posts will in future be filled by women, or by men unfit for military service or foreign doctors Unmarried women doctors under 31, however, may now be compulsorily recruited on the plan which, up to now, held for men thus before recruitment they will be able to take a B2 post after six months in an A post, and a B1 post after six months in a B2 post Thanks to the large numbers of men and women qualifying and the system of appointing final-year students as residents, there is not likely to be any shortage of house officers this year

The Forces need other personnel besides the newly qualified, and their increasing demands have influenced developments in the EMS during the year They have first claim on all medical men under 46, so that the EMS is having to consider carefully the distribution of its medical staff and especially of the consultants and specialists remaining to it. The Medical Personnel (Priority) Committee scrutinises the needs of the Fighting Services and has been able to suggest ways of economising so that their demands can be lowered to some extent. Regional committees have also been set up to see that there is no overlapping, and that wherever possible the doctors of one Service will undertake work for another. More use is being made of civilian doctors, too, and plans have been devised for moving medical and nursing staff from hospital to hospital as their services are needed. A list of EMS hospitals has been drawn up at which Service cases will be concentrated, and staff will be correspondingly grouped to meet their needs. Committees have also been appointed to economise the use of specialist staff in ear, nose and throat work and psychiatry.

Other aspects of the EMS have not been neglected. The pathological laboratories have been increased in number since last year and now form a network supplying the greater part of the country; the laboratories are being linked up with the universities and will certainly become a permanent and valued part of English medicine. The EMS transfusion scheme has been expanded and consolidated and is pulling well with the Service schemes. EMS hospitals are trying to relieve the waiting-lists at voluntary hospitals, whether under the scheme or not, by offering facilities for the transfer of patients; EMS hospitals will now be able, for example, to accept gynæcological cases. Rehabilitation schemes for patients with head injuries or orthopædic conditions have been developed, and new centres for the treatment of spinal injuries have been formed. Students have access to these as well as to the other special centres for plastic surgery and jaw injuries, head injuries, chest injuries, peripheral nerve injuries, orthopædic surgery, fractures, and skin diseases. There are also special centres for neuroses, to which students are not given access. Interchange of knowledge through the committees of the Medical Research Council is as lively as ever, and new committees on spinal and crush injuries have been formed. The EMS is giving up some of its convalescent centres to provide hostels for ATS and nurses, or to be used as residential nurseries; it is understood that if casualties became heavy the centres would revert to their original purpose.

Salaries have not been revised since last year, and are paid on the following scale:

		£
Group officer		1300
Officer in charge of surgical or medical division (hospital of 500 beds and over)		950
Surgeon or physician specialist		800
Medical officers	Senior	550
	Junior	350
House officers	Senior	200
	Junior	120

The future of the service is already under consideration; surveyors are working on plans for a national hospital scheme which will certainly be organised regionally, though not necessarily according to existing regions, and will probably be administered through the local authorities.

INDUSTRIAL MEDICAL SERVICES

The effect of occupation on health is a subject which has become increasingly popular during the past twenty years or so, and partly owing to the stimulus of war, but partly also to other causes, industrial medicine at the present time is in a state of transition. Whatever direction the changes may take, it seems clear that industrial or occupational medicine in the future will provide more and more opportunities for medical men and women. Industrial health is at present supervised by a number of departments or organisations, the oldest of which is the Factory Department of the Home Office, recently transferred to the Ministry of Labour, which administers the Factories Act, the many regulations and welfare orders dealing with the prevention of accidents and illness, the regulation of the hours of work of women and young people, and the provision of cloakrooms, washing accommodation, first-aid and ambulance rooms, mess-rooms and canteens. On the staff are 15 whole-time medical inspectors of factories whose work largely consists of general and detailed investigations of any conditions which may affect the health and welfare of factory workers. Under their supervision some 1700 general practitioners render part-time service as examining factory surgeons, and their main duties are the medical examination of all young entrants into industry, the periodical examination of workers engaged in certain unhealthy processes, and the issuing of certificates under the Workmen's Compensation Acts for the scheduled industrial diseases. Health in coalmines is dealt with by a medical inspector of mines, and it seems likely that under the new Ministry of Fuel and Power the medical services for coalminers will be extended and more whole-time doctors appointed. The silicosis and asbestosis medical board is made up of 9 whole time medical men whose function is to examine workers entering silicosis- and asbestosis-producing industries, to carry out periodical medical examinations of these workers, and to issue certificates for compensation in cases who have actually contracted silicosis or asbestosis.

Before the war the practice of appointing whole time or even part-time medical officers to individual factories had not been adopted in this country as widely as it had been in the United States of America. But there was a nucleus of about 50 whole-time works medical officers in various factories throughout England, Scotland and Wales. Partly as a result of the Factories (Medical and Welfare Services) Order, 1940, made by the Minister of Labour, there has been a rapid increase in the number of whole-time and part-time medical officers in factories. The Ministry of Supply has also appointed a number of whole-time doctors to work in the Royal Ordnance Factories scattered throughout the country. The Minister of Labour's Order applies only to factories doing work on behalf of the Crown and is essentially a war time measure. It is probable however that many of the appointments will become permanent after the war because it is a matter of common knowledge that once employers have experienced the benefits that a medical service can contribute to the smooth working of a factory—and incidentally to the balance-sheets—they rarely abolish it. The medical officer in a factory will find a wide field to interest him and great opportunities for studying the reaction of the workers to their environment. Apart from day-to-day examination of individuals who are sick or exposed to special risks, the doctor can undertake the personal and general education of the workers in hygiene, and can promote effective liaison between the factory services and the general medical and hospital services. He can supervise the treatment of accidents, reduce the number of septic cases to a minimum, follow up the treatment of fractures and other serious injuries and illnesses, and see that all patients return to work in the shortest possible time consistent with adequate treatment and rehabilitation. He can treat cases of minor illness and injury in such a way that many of them will be able to remain at work. In war-time accidents and illnesses which keep workers, especially skilled men, away from the factory must be regarded as war casualties and a medical officer who can minimise the resulting loss of working time is doing highly important war work.

Facilities for training potential and newly appointed works doctors have been provided by week-end courses in London, Birmingham, Manchester, Sheffield and Leeds. Research work into environmental conditions in factories has been carried on during and since the last war by the Industrial Health Research Board under the Medical Research Council, and much valuable physiological and statistical work has been done. The council has recently appointed a director of industrial medical research and further important developments on this aspect of industrial health can confidently be expected.

PUBLIC HEALTH

The protection of the public health has now been a recognised function of the state and local authorities of this country for almost a hundred years. Originally concerned with problems of sanitation and environmental hygiene, the British public health service led the world during the nineteenth century in providing sanitary necessities and in removing some of the worst effects of the industrial revolution. About the beginning of this century its scope was extended to the more personal side of public health with the creation of the school medical, maternity and child welfare, tuberculosis and venereal disease services and all their ancillaries, and later the Local Government Act of 1929 enabled local authorities to take over and improve a vast system of public hospitals, so that at the outbreak of war the beds controlled by public bodies were more than twice the number of those in voluntary hospitals To the man or woman seeking a hospital or laboratory appointment the differences between service under a local authority or the Emergency Medical Service and in a voluntary hospital are slight and diminishing

These considerations, however, hardly apply to the student contemplating public health as a specialist career No medical officer of health may be appointed unless he holds a registered diploma in public health or its equivalent, but once accepted he enjoys security of tenure, in that his removal—like his appointment—must receive the sanction of the Minister of Health Since the war the number of institutions at which the course of training required for the diploma in public health is available has been limited After obtaining the DPH, an appointment as assistant medical officer of health and school medical officer can, under present conditions, be obtained without difficulty The duties at this stage are mainly clinical, in connexion with the school medical service, maternity and child welfare and specialised clinics of various kinds, or in charge of beds in isolation hospitals In the counties, the post of assistant medical officer of health is often combined with that of medical officer of health of a county district, which provides an attractive mixture of administrative and public health work The higher posts are in the main administrative and the medical officer of health of, say, a large county borough, is more in the position of the managing director of an important firm employing several hundreds of technicians than a doctor The ever-increasing emphasis on preventive medicine enhances the importance and scope of the work of public health departments and medical officers of health

On the one hand the war has brought new problems and laid fresh tasks on the public health services, while on the other it has seriously reduced the personnel available to carry out these tasks Recruitment is not only thinning at an ever-increasing rate the ranks of medical officers of health and their assistants, but has taken a heavy toll of essential auxiliaries such as sanitary inspectors, health visitors, and clerical officers Among the new problems may be mentioned the evacuation of children and others to safe areas, which has thrown a strain on the public health staff and sanitary resources of many rural districts and made necessary the extension of schemes for sewerage and water-supply, the establishment of temporary hospitals, sick bays and hostels for maternity cases and minor infectious diseases and the expansion of the services already existing, the improvement and supervision of the hygiene of air-raid shelters used as dormitories in target areas, and cooperation with the medical departments of the Forces in matters common to them and the civilian population, such as epidemic outbreaks, accommodation of infectious cases, water-supply and sewage disposal in camps There has also been a large expansion of laboratory facilities under the Ministry of Health's emergency laboratory service, this has put at the disposal of every local authority and EMS hospital a laboratory capable of meeting its needs Much thought has been given to the planning of the medical services after the war and already public pronouncements have foreshadowed a regional hospital organisation in which voluntary and public hospitals will both be included, graded, and integrated Whatever the future may bring it is clear that there will be drastic changes, and that preventive and social medicine will play a larger, not a smaller, part in the whole scheme

LONDON COUNTY COUNCIL HOSPITALS

The hospitals service of the London County Council provides not only special facilities for undergraduate instruction, but also opportunities for valuable experience for medical graduates who intend either to be general practitioners or consultants, or to make the LCC Public Health and Hospital Service their career At the beginning of the war, the service, one of the most comprehensive hospital services in the world, contained 97 hospitals with beds for 71,694 patients The 97 hospitals consist of 44 general hospitals, 32 special hospitals and 21 mental hospitals and institutions for the mentally defective; 54 of the hospitals are included in the Emergency Hospital Scheme

Treatment is provided in these hospitals for all kinds of acute and chronic illnesses, including fevers, tuberculosis, mental and nervous disorders

HOSPITALS BRANCH

Medical superintendents of the hospitals, who are expected to be experienced hospital administrators, receive £850 to £1650 a year, in hospitals varying in accommodation from 160 to 1300 patients In addition, medical superintendents are provided with an unfurnished house or quarters with payment by the Council of local and water rates The other full-time medical staff are classified as follows

Grade	*Annual salary*
Deputy medical superintendent, class I	£650—£50—£800
Deputy medical superintendent, class II	£600—£30—£750
Deputy medical superintendent, class III	£550—£25—£650
Deputy medical superintendent, class IV	£500—£25—£600
Senior resident surgeon physician, or obstetrician, and senior assistant medical officer	£500—£25—£600
Assistant medical officer, class I	£350—£25—£425
Assistant medical officer, class II	£250
Senior house officers	£200
House physicians and house surgeons	£120

These officers are provided with board, lodging and washing Clinical assistants, who are non-resident, receive £150 a year with meals when on duty Vacancies in the higher grades are filled as far as possible by promotion from the existing staff In addition, a large number of part-time consultants and specialists are employed in the various hospitals and the establishment provides for a certain number of whole-time non-resident specialists at a salary of £1250—£50—£1500

There was some disorganisation of the consultant service at the outbreak of war, but by February, 1940, it was again working normally, though with reduced numbers of sessions A comprehensive pathological service has been established There are seven group laboratories, each of which serves a number of hospitals, a central histological laboratory, and an antitoxin establishment Attached to the group laboratories are subsidiary laboratories situated in the various hospitals Normally a medical staff of 27 is attached to these laboratories, but some of them are at present working at other laboratories under the EMS

TEACHING FACILITIES

During the war, courses in fevers for the diploma in public health are held in the council's hospitals, other post-graduate facilities have remained as they were The British Postgraduate Medical School is located in the Council's Hammersmith Hospital

Patients under treatment in the Council's hospitals have not been much reduced in number, and increased use is being made of them for teaching purposes Maternity wards of many of the voluntary hospitals have been closed, and arrangements have been made whereby maternity students have had training and experience in the maternity departments of the Council's general hospitals Most of the students are resident and attend for a fortnight at a time In addition, students have been allocated to a number of the general and special hospitals under the Emergency Hospital Scheme to act as dressers The Council has agreed that medical training and experience shall be provided whenever possible, in most cases the students, some of whom are resident, receive systematic instruction from the resident medical staff of the hospital The fever hospitals provide special facilities for undergraduate instruction, and when patients are available, for demonstrations in the diagnosis and treatment of smallpox for both undergraduate and postgraduate students Students are resident during their course of instruction in some of the fever hospitals

Most of the general hospitals are recognised training centres for candidates for the University of London MD examination, 18 of them for the Diploma and Membership of the Royal College of Obstetricians and Gynæcologists and for the final FRCS examination and the Diploma in Anæsthetics Service at Queen Mary's Hospital for Children, Carshalton, is recognised by the Royal Colleges of Physicians and Surgeons as a part qualification for the Diploma in Child Health

MENTAL HOSPITALS BRANCH

The mental health services of the LCC are responsible for a large medical service, vacancies in which are normally advertised at short intervals No new permanent appointments are being made at present, indeed the staffs of the various hospitals have been reduced as a war measure In peace-time those appointed to the service may be sent to any of the Council's mental hospitals and may be transferred from one hospital to another should circumstances require it An applicant enters the service as assistant medical officer at a salary of £470 a year, rising by annual increments of £25 to £570 Salaries are graded through the various ranks to £1450 paid to superintendents of large hospitals, a superintendent is also provided with an unfurnished house on the hospital premises Assistant medical officers may be required to live in the institution which they are serving and to pay fixed rates for board, lodging and washing Officers contribute to a superannuation fund They are required to take a Diploma in Psychological Medicine within three years of entering the service and the diploma carries with it a payment, in addition to salary, of £50 a year Promotion is reasonably rapid for men The mental health services are actively concerned in the EMS Three hospitals are used entirely as emergency hospitals and at eight others there is an emergency hospital section Treatment is provided for all types of acute, medical and surgical cases and the hospitals are staffed and equipped to give specialised treatment The medical staff for these hospitals is drawn mainly from the emergency medical service

MENTAL HOSPITALS OUTSIDE THE LONDON AREA

Posts for medical officers in the provinces are similar in scope and remuneration to those in London They are advertised regularly in the medical journals

PRISONS

At the larger prisons whole-time officers are appointed, sometimes with deputy medical officers to assist them Unfurnished quarters are provided or an allowance made in aid of rent Posts are pensionable and promotions are made as vacancies occur Candidates with a diploma in psychological medicine receive £50 per annum more on appointment than candidates without this qualification, and are given preference provided they also have good all-round general experience At the smaller prisons no whole-time officers are employed local practitioners are usually appointed as part-time officers Further particulars can be obtained from the Prison Commissioners, Oriel College, Oxford.

Services Abroad

INDIAN MEDICAL SERVICE

Recruitment to the Indian Medical Service, which is designed primarily to meet the needs of the Indian Army, has been modified by the war, and officers are now appointed to emergency commissions in the military branch for the duration of the war The method of recruitment of male medical officers, other than those of Indian or Dominions origin, has recently been altered and those wishing to be appointed are required to join the Royal Army Medical Corps first After a course of instruction, they can apply to be posted to the Indian establishment, and are then given an opportunity to transfer to the Indian Medical Service Officers selected for transfer will be given preference when the permanent commissions in the Indian Medical Service are granted again after the war The upper age-limit for European emergency commissioned officers is at present 45 Antedating, in the Indian Medical Service, may be granted on transfer to officers who have held an approved whole-time appointment in a recognised civil hospital and to those who possess higher qualifications and professional experience Antedating equivalent to half the period spent in practice less the period granted in respect of hospital appointments, is also allowed up to a maximum of 5 years All previous full-pay commissioned service with the armed forces as a medical officer also counts towards rank and seniority on transfer. Qualified officers selected for specialist posts are granted appropriate temporary rank with the pay and allowances of the appointment Passages to India are not granted to wives and families but if, on the termination of his service, an emergency commissioned officer chooses to stay in India, an allowance is made to take him and his family to the place they choose to live in

The pay of a European lieutenant in India is £585 per annum and of a captain on promotion £750 per annum, on his release an emergency commissioned officer receives a minimum gratuity of Rs 2000 if his date of registration as a doctor was before Jan 1, 1940 or Rs 1000 if registered on or after that date, provided he completes a year of service, he gets an addition of a month's pay for each further year of Army service If invalided out for a disability due to service he receives disability retired pay appropriate to his rank and degree of disablement, which for Europeans is as for officers of the RAMC If he dies as a result of military service during the war provision is made for his widow and children

Women medical officers are appointed direct to the Indian Medical Service by the Secretary of State for India under conditions similar to the above Full information regarding these appointments and those available for Indian medical officers, for whom the age limit is 40, may be obtained from the Secretary, Military Department, India Office, 4, Central Buildings, London, S W 1

WOMEN'S MEDICAL SERVICE FOR INDIA

Admission to the service is by selection in India and England The cadre consists of 44 permanent and 6–10 temporary medical officers Appointment is open to English and Indian qualified women Vacancies are few—usually only 3 or 4 in each year, and there is little recruitment from England There is also a training reserve of about 14 recently qualified women recruited from Indian universities Since the outbreak of war no members of the training reserve have been sent to England for postgraduate study Leave out of India has also been restricted and vacancies in the service are being filled by doctors in India as need arises The office of the Dufferin Association in London is closed for the duration of the war, and the post of medical adviser is in abeyance Those seeking information about the Association should apply to the High Commissioner for India, India House, Aldwych, London, W C 2

During the war women medical officers are appointed direct to emergency commissions in the Indian Medical Service by the Secretary of State for India, under conditions similar to those for men Full information may be obtained from the Secretary, Military Department, India Office, Clarence House, 4, Central Buildings, London, S W 1, or from the Medical Adviser to the Secretary of State, India Office, S W 1

COLONIAL MEDICAL SERVICE

The Colonial Office is anxious that young doctors should realise that recruitment for the Colonial Medical Service at the present time has been officially approved and that service in the Colonial Empire is of as much national importance as service in the Forces Vacancies occur most often in the larger medical departments in tropical Africa Specialist appointments are usually reserved for officers already in the service who have shown outstanding merit in a particular branch Vacancies may arise for women with experience in maternity and child welfare work Selected candidates are generally required to attend a course in tropical medicine and hygiene, before going overseas or during their first leave period The various government medical departments employ about 700 European medical officers, including some 30 women, and about 1200 locally appointed medical officers Medical experience may include—among other diseases associated with the tropics—malaria, yaws, leprosy, sleeping sickness, plague, yellow fever and cholera, as well as the diseases of common medical practice An officer in the Colonial Medical Service has special opportunities for the practice of his profession in preventive medicine as well as in other branches, there are also opportunities for teaching and research Full particulars of the terms and conditions of service may be obtained from the Director of Recruitment (Colonial Service), Colonial Office, 2, Park Street, London, W 1

SUDAN MEDICAL SERVICE

This service is responsible for carrying out civil medical and public health duties in the Anglo-Egyptian Sudan and for the health of the Sudan Defence Force The British staff consists, at present, of 34 medical inspectors and senior medical inspectors with 11 additional senior posts promotion to which is by selection Medical inspectors are first appointed on probation for two years Pay starts at £E720 (approximately £738), rises by biennial increases to £E1080 and after 13 years service to £E1200 (approximately £1230) There are higher scales of pay for the senior posts No income-tax is at present levied in the Sudan There is a pension and provident fund An official qualifies for pension at the age of 48 if he has then completed at least fifteen years service and retirement is usually enforced at 50 There is provision in the pension scheme for widows and children The service offers a great variety of work among many different races, including work in large and well-equipped central hospitals, supervision of medical and public health work in the towns and districts, inspection of schools and school-children, examination of candidates for government service and the training of medical assistants and Sudanese sanitary officers and overseers The Khartoum Medical School is staffed by members of the service who receive additional remuneration for this work Private practice is allowed so long as it does not interfere with government duties but there are opportunities for such practice only in a few of the larger towns In peace-time, leave of 90 days is usually granted every year after the first 18 months of service, and study leave may be given for special purposes Full pay is drawn during leave periods and there are allowances towards the cost of passages Since the war the service has had to undertake many additional responsibilities Nearly half of its members have been given temporary commissions and a number have found that their duties have carried them into adjacent territories Recruitment ceased for a time at the end of 1939, but has since been revived The Central Medical War Committee is fully aware of the requirements of the service and has raised no objection to the appointment of those selected to fill vacancies Further information may be obtained from the Consulting Physician to the Sudan Government, 93, Harley Street, London, W 1

SOUTHERN RHODESIAN MEDICAL SERVICE

The government of Southern Rhodesia maintains a medical and public health service in which there are 16 whole-time appointments and 34 part-time appointments The part-time government medical officers are usually in general practice and serve all stations except the large towns of Salisbury and Bulawayo There are also 9 medical officers who receive a subsidy of £250–£360 a year for doing necessary government work, most of these are medical officers to mines or medical missionaries Rates of pay for whole-time officers are as follows

Medical director chief health officer, and director of medical services	£1500 p a
rising by £50 increments to	£1750 p a
Director of laboratories (2 posts)	£1000 p a rising by £50 increments to £1250 p a
Radiologist (2 posts)	
Medical superintendent of mental hospital	
Field officer	
Health officer	
Male school medical officer	
Female school medical officer	£600 p a
rising by £25 increments to	£900 p a
Medical officers to leprosy or mental hospitals (3 posts)	£600 p a
rising by £25 increments to	£750 p a

Government part-time medical officers are appointed at a salary of £600 p a rising by £25 increments to £750 p a Promotions are made as vacancies occur to posts which carry a final salary of £900 p a Officers usually find that practice offers an additional source of income ranging from £200 p a upwards Their government duties include the supervision of the 18 government hospitals and numerous native clinics, and of gaols, police camps and government stations Leave is granted at the rate of one-eighth of service, and may be taken in periods not exceeding 184 days at a time; study leave is also granted After two years' service medical officers under 45 can be appointed to the fixed establishment and contribute to a pension scheme, the retiring age being 60 The service has released many

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officers to serve in the Forces, and additional calls have been made on the remaining medical personnel since the department took over the hospital care of a large air training group in the colony, as well as the supervision of the several camps of interned Italian civilians Appointments in Great Britain to the Services are made by the High Commissioner for Southern Rhodesia, Rhodesia House, 429, Strand, London, W C 2, who will supply details on request.

In the New World

Twenty-five fortunati accepted last year the invitation of the Rockefeller Foundation to continue their medical studies at American and Canadian universities Thirteen of them have told us of their experiences Their hosts should be able to judge, from the manner of the telling, how much their generous welcome has been appreciated

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Ships, like cities, sometimes come alive London before I left was alive, and our little ship came alive half way through the journey At first there were long lines of little ships on a silent sea, looking like a scene from the child's jigsaw puzzle, then one night the wind rose to a full gale, the sea became the Atlantic, the ship an animal fighting for survival I remember spending the greater part of the night on the covered-in deck below the bridge Our funnel was on fire and illuminated most of the ship in patches, and a bit of the sea around The log was hanging vertically downwards sometimes with only a few yards of the cable showing above the waves, sometimes stretching down into the bottom of a gigantic trough We seemed to be rolling clean over on to our side, and despite the fact that we drew only twelve feet of water (having no cargo except a hogshead of whisky) some of the waves came overboard and one caught the bridge Judging from the inclination of the mast to a hypothetical vertical, we never leaned over more than about 20°, but it felt like 45° at least Down in the cabins everything was flung against the starboard wall—carpet, clothes chairs washing things, even the bedcovers—and my dumpy little "War and Peace" leaped from the top bunk and landed square on my partner's chest as he wrestled with the furniture at the opposite side of the cabin A few days later we arrived in America, admired the myriads of identical, unreal churches along the banks of the St Lawrence, made acquaintance with the comforts and the negro conductors of the Pullmans, goggled frowsily at New York and the Skyway and arrived at our destination just after the dean of the medical school had left So we barged into the nearest office we could see and explained our plight to an elderly unassuming gentleman, who seemed to understand not only our accents but us as well This was no problem to him at all · within five minutes he had asked us home for dinner and the night, rung up his wife, and gone out with us to buy—miracle of miracles—a steak over the counter Later we discovered he was one of the foremost experimental physiologists in the world That incident was illustrative of American hospitality

In a general way the work here is much the same as at home At first we were overwhelmed by the multitude of lectures and exams and the dimensions of the text-books Certainly one is expected to learn more than at the English medical schools, but the result tends to be that one thinks less Lectures are given, the textbook is read by the few who can plough through it in time, and frequent questions are asked on the material The Americans have a popular radio programme called "Information Please" run on the same lines as our Brains Trust, but instead of having a discussion, the participants simply answer questions, right or wrong, for a bet with the questioner That's another illustration of American life In the medical education sphere, the result of this method is the turning out of a high level of general practitioner, who knows what to do in most circumstances according to Mrs Beeton, but who tends, I feel, to lose sight of the humanity of his patient, it also accounts for the purely bandwagon research in the more specialised journals But with these faults, the education is still at least as good as that in England, which after all suffers from the same malady, and, aside from medicine, opportunities are great In the last months I have heard Toscanini, Heifetz, Rachmaninoff and Horowitz, and have seen a production of Macbeth that left as little to be desired as any production could, I have driven to Chicago and back and seen something of the little towns that go to make the Mid West, without realising that it was as if I had been from London to Warsaw in two days, I have acquired an old blue jalopy which rears at a traffic light like a bustled suffragette, I have grown fat eating irradiated oats, polyvitamin chocolate bars and aseptic hot dogs, I have almost essayed to jitterbug but find the cut of English trousers rather a handicap, I have shouted at football games but still can't fathom why, I have made many friends, both students and faculty, in my own and other universities, I have got engaged to be married I like America

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War is best known to some of us in its guises of rationing and ARP The United States of September, 1941, was a country on the brink of war, and preparing for it, but a country where ARP was still a strange new creature and rationing an almost unthinkable innovation These two aspects were incongruously blended on the ship which took twelve of us to America Big pats of Canadian butter and such strange dishes as "head cheese" convinced us we were no longer at home, but the ceaseless watch for the enemy, the dashing naval escorts and the numberless other evidences of the Battle of the Atlantic, still reminded us of Britain And when we landed, despite the great generosity and hospitality of our hosts, some of us continued to feel sojourners in a strange land until Pearl Harbour was bombed three months later The medical profession at least can take credit for being partially prepared in a military sense and well prepared mentally Within a few weeks of the declaration of war, many hospitals had sent large military or naval units to training camps, and in some cases to war zones, and only a few days elapsed before plans were being made for an acceleration of the medical course to reduce by a year the time taken to graduate

American medical students are recruited from college graduates who have spent four years in studying premedical subjects and the liberal arts For this reason the American medical student is usually twenty-five or over before he is qualified and can take an interneship, which corresponds to our residentship For the duration of the war, the colleges as well as the medical schools have shortened their courses from four to three years by running classes throughout the long summer vacations Recently, too, it has been made possible in some universities to fuse the final year at college with the first at medical school One aspect had to be seriously considered in the acceleration of college and medical school courses most students pay for their classes in part by working—during the term, for instance, they may act as first-aid workers in factories or as waiters in restaurants, on a part-time basis Their main income, however, is derived from the work they do during the long vacation This source has been suddenly and unexpectedly cut off, but the Bureaus of Education and of the Budget are preparing a bill to lay before Congress designed to provide government loans for those students who need them Interneships are offered by most hospitals for twelvemonth periods, but now that the academic year has been reduced to nine months interneships may be reduced accordingly Many American hospitals provide "rotating" interneships giving experience in several departments for short periods These may prove valuable for those who have only a relatively short interval between graduation and induction into the Army Interneships hold an important place in medical teaching, at least some of the clinical instruction that British doctors receive at university their American counterparts derive from interneships Thus doctors in America tend to go into practice several years later than in Britain, they are often married and usually have little money left after their long training Fortunately for the young doctor, it is the custom for him to set up his plate, or "shingle" and build up a practice of his own, in the Middle West at least the custom of buying a practice is almost unknown The age of the students and the fact that they are already graduates of a premedical college tend to remove the medical school from contact with other parts of the university and to give it a position resembling in some respects that of a technical school The American doctor has a sentimental niche in his heart for his college, which his medical school never seems to share He is much more interested in learning his profession than in anything else, and he brings to this that keenness and earnestness that are a feature of the American character Scholarships to medical school, such as ours at home, are rare, financially their place is taken by external jobs Another type of scholarship is fairly common, however one which provides the student with a year free from classes and examinations, in which to do research under one of his professors Research is in general more closely woven into the medical teaching here than at home and the interest of the students is correspondingly increased in it While the benefits from this state of affairs are great, it is one of the reasons why some of the clinical work is left to the interneship

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Among the achievements of American medical schools the one that impresses me most is the close liaison between medical practice and medical research, an association which has been so productive in recent years The correlation between preclinical teaching and its clinical applications too stimulates interest There are differences in medical teaching not only between the United States and Britain but between different schools in the USA A few schools regard lectures as desirable only when there is no adequate literature on the subject, student research is encouraged, and the aim is not so much the acquisition of facts as the development of a truly scientific approach to medicine Exams are rare, but are the cause of a good many "fatalities" It is considered that students who survive and do well in such a school will continue to succeed later in their medical career The other and more common type of medical school has highly organised teaching, many excellent lectures and clinical demonstrations, plenty of minor exams and a few large ones Students are carefully graded on the results of these exams and on the reports of their instructors about their practical approach to patients In this way the average standard is maintained at a high level, and there is inevitably a competitive spirit among the students In a few cases this may restrict a student's learning, since the temptation is to work for the next exam and to study only those things on which questions are expected The exams are interesting and different from those I am used to Many of them are of the one-word answer type and also of the "true" or "false" intelligence test variety With well thought-out questions this type of exam is efficient in assessing a student's knowledge in a minimum of time, and it is easy to express the result on a numerical basis However, the examinee is given no chance to enlarge on points that particularly interest him or to discuss controversial aspects of the subject Students who have been accepted by recognised medical schools are not being called up, but are offered commissions in the Army or Navy Medical Corps Reserve while they are still in medical school

Ever since arriving in this country I have been impressed by the friendly and generous reception we have had, and very much hope that a reciprocal exchange of American and British medical students may be possible in time to come

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I arrived in one of the younger of the Middle West medical schools last fall after a long and eventful journey From the moment I arrived I was made to feel at home, a few hours after stepping off the train I was enrolled as a member of the third-year class, and next day I was at work For the arrangements made for my reception here, and for the cordiality with which I have been treated I have many to thank, particularly the dean of the medical school, who has in all respects "gone the second mile" with me There is a notable bias in this part of the country towards application of the basic sciences in the practice of medicine There is active cooperation between the clinical groups in the hospital and the departments, particularly of physiology and pharmacology, in the medical school A third-year student has plenty of didactic teaching—even to six urs of lectures in one day The junior student is ven less responsibility than his counterpart in Britain , is taking as it were. a laboratory course—in this case ward work—rather than getting experience in a actical art It is not until his fourth year that he as full opportunities to gain clinical experience By at time he is perhaps better fitted to benefit from them, wever than I was in my earlier ventures into the ards in England. A happy circumstance is the bsence of formality A healthy democratic principle llows a junior student to approach one of the chiefs nd discuss or even criticise his precepts with the utmost eedom The practice is open to abuse but one must ppreciate the coöperation and open-mindedness which is revolution from tradition has brought about in he profession at large.

My school differs from any medical school in Britain nd from many in America in being under state adminis-ration. It is part of a state university. and the hospital s a free hospital subsidised by the state and county uthorities The hospital staff is employed on a more or ess full-time basis by the university or by the department f health of the state This is in contrast to organisa-ion in England, but from the students' standpoint the difference from a teaching hospital in England was less than I expected and perhaps hoped

The last two years in medical school are being generally pruned Though any shortening of the medical course must be regarded with concern in this school an intelligent compromise is being made between the ideal and the lengthy training of peace-time and the shortened war-time programme of medical training now being considered throughout the country. Even in the two years I am to be at this school my course will be shortened by ten weeks, by elimination of vacations and curtailment of courses The year of interneship an integral part of the medical course, is fully protected from interference, but after that the qualified doctor who has been enrolled since the age of 21 on the Army or Navy Reserve will be called into service immediately Severely curtailed facilities for postgraduate specialisation are being at present reserved for the lame the blind and the female

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There were many enchanting incidents during the voyage for example, there were the Northern Lights for which we had a front row seat the phosphorescent wake behind the ship. and the school of porpoises which lay ahead of us just beneath the surface of the water; those indeed made some of us start looking for our life-jackets—they looked so like a submarine lying in wait

Once docked in Montreal, the Second French city we lost little time in discarding our seaboots and seeing the night lights A “ jitter bugging ’ contest formed the main attraction for some of us but we were only admiring and, I may say, astonished spectators

Next day we got our first taste of New World universities and hospitals at McGill University and the Neurological Institute, and they were certainly wonderful Our party soon broke up and we set off for our widespread destinations After a train journey taking well over a day, we had our first view of Ol Man River but were not required to “ford it by means of ice floes ”, we used one of the giant bridges Our welcome was American , after a rapid but complete circular tour of St Louis, the festivities were at once opened by a visit to the local stadium to see a ball-game a wonderful introduction to American life with its frankfurters hamburgers. white-shirt-sleeved men and wisecracking crowd Soon afterwards, work claimed all our attention and we found ourselves taken into the fold The most obvious difference from English medical training lies in the almost complete absence of didactic lectures and their replacement by the so-called clinical lecture This does not replace ward work which still takes up the greater part of one s time Being accustomed to the systematic lecture system, one feels that the clinical lecture fails to cover the whole syllabus but, on the other hand, the lectures are certainly more vital American examinations, too, are different being designed to assess the candidate's knowledge more objectively than British examinations , and there is a greater tendency to grade the student on his work throughout the year rather than on examination results alone American hospitals have an advantage over ours in their relatively sound finances this is manifest in their magnificent buildings and excellent equipment The clinical teaching staff includes many more full-time university teachers and research workers and private practice and teaching do not often go together American public health seems to be especially well organised; one very impressive scheme is the publicity given to the lay public on such diseases as cancer. heart disease mental disease and venereal disease Startling results have followed such campaigns There are two of us here at St Louis and we shall be the first to return to England—probably next December In the meantime we plan to get as much out of this trip as we can so that any novel ideas may be tried out at home

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When I arrived I found that the medical course at McGill had been reduced to a total of four years in the medical school and one year minimum of interning Of the four years in the medical school the first and three-quarters of the second are spent in preclinical work, and during the last few months of the second year the student gets an introduction to clinical medicine and learns his general pathology The system was much like the one at Oxford when I was doing preclinical work there at the beginning of the war The principle underlying the work of the third year is that the student should get a fundamental knowledge of the whole field of clinical medicine and an exhaustive knowledge of pathology Education is by a series of lectures and clinics with some practical work and tuition in the wards Thus in special pathology there are two lectures and four more practical classes every week throughout the year. Through the year, too, we have two clinics or lectures each in medicine surgery and obstetrics and gynæcology. every week Other courses of lectures or clinics run for varying lengths of time during the year on pædiatrics public health forensic medicine ophthalmology radiology, therapeutics and other subjects On top of this undercurrent of lectures the whole year is divided into three basic terms for ward work one for obstetrics and gynæcology one for medicine and one for surgery A student in his third year has little responsibility in the wards although more recently progressive reduction in the staff of the hospitals has somewhat altered this Normally his case-histories are mere duplicates and his physical findings tend to be accepted with reserve, which rather damps his enthusiasm However all case-reports are written up with the same care as in an English hospital and are corrected by the chiefs The ward rounds are very good and differ little from their counterparts in England The term in obstetrics is largely designed as a lecture-demonstration course and we get no practical experience in this subject till the fourth year when each student spends nearly a fortnight living in the maternity hospital The McGill course in pathology requires special mention it is a very fine course indeed, and judging from the comments I have heard from people in high places is considered one of the best in the world In the fourth year the student goes over the whole of the field of medicine again in greater detail filling in gaps with more emphasis on the practical side The third year leaves little to the imagination , by the end of it one is expected to know as much as many people know when they graduate from other medical schools At the end of the fourth year the student is given his degree, and becomes an intern It is during this period that most practical knowledge is acquired and although after a year of interning he is allowed to go out into general practice provided that he passes his state examinations, usually he will take another year or even two

The subject matter taught is like that taught in an English hospital, and many of the textbooks are the same, and of course Meakins s Practice of Medicine and Boyd's ‘ Text-book of Pathology ’ are constant findings throughout the university being both excellent and Canadian A point of considerable difference is the large number of examinations we have here oral during the middle of the year, and written and oral at the end I must admit that they are both stimulating and productive of hard labour

Since America's entry into the war the medical course has become more and more concentrated and I fancy the effort over here to get medical students educated quickly and thoroughly compares favourably with the effort in England Vacations are becoming mere skeletons of their former selves, and although on paper it seems that this is no hardship, since normally we get at least two and a half months off in the summer, it is in reality quite a sacrifice Students over here work much harder while they are at medical school, as you may judge from the curriculum, than their English contemporaries, and some students depend on the summer vacation for time to earn money to enable them to complete their course at McGill Then short vacations are useless to some of the students who come from as far afield as California, Texas, Florida, the New England states, the Middle West, and anywhere in Canada, from Vancouver to Nova Scotia Many have farther to travel to get home than I would to get back to England With us here we have the spirit of Osler, and the McGill tradition of research and service More immediately we are much concerned with getting qualified and into the Services

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It is only recently that I have hazarded my hands from the warmth of my bed to the cold of holding a pen, as I am rudely exposed to the frigid air of the Adirondack Mountains in up-state New York Since November I have been confined to a sanatorium as a minimal case of pulmonary tuberculosis and the memory of being precipitated into New York City has diminished in size and clarity At least I can testify to the willing care the Rockefeller Foundation takes of its students' health I can imagine few more potentially desolating situations than to be discovered a "wretched consumptive" in the first few weeks of one's entry into feverish peace But not so such is the attentiveness of this foundation that the whole rather dismal affair is turned into a holiday-cum-exciting experience of the patient's end of things It seems I am being shown the underside of my job as well, rather like the driver of a car being allowed to inspect the guts of his vehicle from the pit of a garage

My entry into the big city was rather like drinking very strong alcohol—I mean when *I* drink very strong alcohol (which is as rarely as possible) Before the dreaded confusion and swirl descends on one, it seems that a stray steam-hammer, with nothing better to do, has taken a sly crack at one's midriff The "Witch's Cavern" of pantomime fame would be a proper representation of my confused entry into furious and break-neck peace What with shops richly stocked, gasoline galore and food aplenty I could scarcely get my breath The only commodity that seemed to be really short and needed to be keenly pursued was time Lease-lend might arrange the shipment of a little of this to New York from England's relative abundance After eating my food in what might have been the booking-hall of a busy railway station for a few weeks, I found myself lost and considerably over-voiced when entertained for dinner in the church-like (or was it normal ?) home of a fellow medical student In spite of assiduous education at the films the most intelligible lecturer, to my alien ear, was a German refugee On buying a newspaper on Sundays I was presented with 120 pages of print of the dimensions of the *Times*—enough to keep me busy for the whole of the following week had I been able to understand more than 10% of it Perhaps the strangest thing of all, in spite of repeated warnings, was the immense hospitality shown to us by everyone we met, this is a thing I shall never forget

With regard to the medical course at Cornell I dare say little, I was so busy absorbing the many innovations and was there so short a time They certainly kept us busy (that might be construed as a British understatement) and we seemed to have every facility in the world at our disposal However, as I say, before I had got over my initial mental indigestion I was seconded to the mountains

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We embarked on a Tuesday in August The party of twelve students formed the entire passenger list of a modest vessel of 5000 tons Our journey was comparatively uneventful, apart from one dive-bombing attack It took us just over three weeks to make the crossing, but at least ten days of our time was spent waiting here and there for convoys We docked at Montreal Neon lights, innumerable cars and plenty of food—these, I think, must have been my first impressions I set out for the Middle West—staying a few days en route in Chicago, a beautiful city, I was fortunate in staying in a hotel on the shores of Lake Michigan, which helped to counteract the effects of gangster films and the novels of Mr Upton Sinclair I was met at the station by four of my fellow students who escorted me to their fraternity and invited me to stay with them I had little trouble in deciding it was an excellent opportunity and I have not regretted that decision The members of this fraternity are all medical students, it resembles our dormitory system in certain ways, but the whole management of the house is in the hands of its members I was much impressed by the size of my foster university The campus is literally a small town on the east bank of the Mississippi, it is well laid out with modern buildings and boasts a university hospital, an auditorium, a palatial union, a daily newspaper, and its own golf links

The medical course formerly occupied four years, with three years premedical work, but since the outbreak of war this has been shortened to three years in medical school by abolishing vacations Didactic work in the clinical subjects is concentrated into the third year, the fourth year being devoted almost entirely to clerkships This has necessitated the inclusion of a great many subjects in the third-year schedule, and as a third year student I have encountered all of them I have been much impressed by the time given to pædiatrics, neuropsychiatry and radiology, I feel they are subjects we in Britain should do well to study more thoroughly Radiology is perhaps more essential in the American curriculum than in our own, since a surprising number of country practitioners have their own X-ray machines of which they make full use The opportunity for elective study in selected fields is one feature of the medical course from which I have benefited greatly Under this system small groups of students may register for these courses and are thus enabled to follow up any subject in which they are interested The final part of the formal medical education is the interneship which must be completed before the university confers the degree of MD

In general the student's attitude towards medicine is more materialistic in the United States than in Britain, at least on the surface, how deep it goes I do not know This may be a direct consequence of the fact that many of the students in medical school must work their way through college

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The first problem that confuses the English student, already awhirl with coco-cola, air-conditioning and high-balls, is the correlation of American and English educational standards High school, junior college, university "med," "pre-med"—how do they correspond to our own system ? They do correspond, though there is perhaps a rather more thorough background to our preclinical courses the essential difference is that the English medical student—in fact any student, arts or natural science—starts to specialise earlier, reaching the final stages of his training when a year or two younger than his American contemporary To the uninitiated observer, the first clinical year seems to be a crescendo of laboratory work routine blood-count, urinalysis and stool examination on all patients, daily counts on all patients receiving sulphonamides and other non-quantitative work as required Fortunately this impression is as unjust as it is superficial Emphasis is predominantly on the *corroborative* value of all laboratory measure An illuminating comparison of the attitudes of our two countries was pointed out by one professor in America, the small-town doctor is often found to be employing the most recent and even experimental methods of treatment, and to be very much up to date in comparison with the more conservative hospitals War has caused one or two changes in our curriculum instead of working three-quarters of a year, we are now to work through a subtropical summer, training thus being shortened The teaching staff is being reduced by half as men are called into the Forces, and the position of the students seems to be less secure than in England On registering "for the draft" students apply for "inactive service" commissions in one of the forces, when they have finished interneship, they are transferred to active service

Some seventy years ago Edward Livingston Trudeau set out from New York to spend what he thought were his last days in the peace and beauty of the Adirondack mountains. He was suffering from advanced pulmonary tuberculosis. The journey, undertaken in mid-winter, was long and arduous, part being made by horse and cart over rough mountain tracks. Contrary to his expectations, Dr Trudeau did not die but lived to found the modern sanatorium treatment of tuberculosis in the United States of America. One year ago I travelled the same route in the luxury of a pullman car, having had the diagnosis of minimal pulmonary tuberculosis made on me by routine X ray a few weeks previously. I could not help finding it a little ironical that, after having avoided bombs and other impedimenta of war for a year or so, the acid-fast bacillus should lay me by the heels. Robert Louis Stevenson lived in the house across the hill from where I am writing. He was here for some months in 1887 when in search of a cure for his consumption. In the words of a letter to a friend during his stay here: "We have a wooden house on a hill top, overlooking a river and a village about a quarter of a mile away and very wooded hills; the whole scene is very Highland, bar want of heather and the wooden houses." The cottage system is in operation; some twenty cottages of brick and wood, each accommodating four or more patients, are scattered over the side of a hill. Set in their midst are the administrative buildings, X-ray departments and laboratories. Treatment is primarily dietetic-hygienic; collapse therapy is only used where these measures have failed. It has been found here that the complications of surgical interference make its indiscriminate use inadvisable.

To the uninitiated the word "sanatorium" conjures up visions of cold bleak corridors and iron bedsteads in which recline the wasted frames of poor phthisical wretches coughing up the last remnants of their bacilli-ridden lungs. My own experience of sanatoria was a little limited, and when people said "You will have a wonderful time at Trudeau" I smiled weakly and thought that never again would I tell any patient of mine "It's only a little operation and won't hurt at all." On my arrival at Trudeau I found the happiest and healthiest community one could ever wish to see. The ambulant patients have the run of lounges, libraries and a workshop with opportunities for fishing and boating and other outdoor occupations which do not involve strenuous exercise. Friends visiting patients generally remark: "Why, it is just like a country club, and where are the patients?" Staff and patients live in harmony, and many ex-patients come and spend their summer holidays at the sanatorium, putting up with a shakedown when the accommodation gets short. Sleeping outside with the temperature thirty below zero is a novel experience. One has the advantage of an electrically heated blanket, but it is a little disconcerting to find the breath freezing on the sheet around one's mouth. For two or three days the subcutaneous facial capillaries rebel, but compensation soon takes place, and after a time it is difficult to sleep in that accursed invention of civilisation, a centrally-heated bedroom. Dr Edward Baldwin, one of Trudeau's earliest assistants, told us of the origin of rest treatment. When the sanatorium was first opened patients were allowed exercise, and in winter bobsleighing was the sport in which most took part. A bobsleighing party had an accident in which one of the members—later to become superintendent of the sanatorium—sustained a compound fracture of the leg. The improvement in his tuberculosis after the rest thus enforced gave the clinicians food for thought which was well digested. When Dr Baldwin himself came to the Adirondacks at the end of the last century for cure he told Trudeau that he had contracted tuberculosis; when asked how he knew, he said that he had used his microscope; this was in 1892. Trudeau remarks on this in his autobiography: "Truly Koch's teaching was beginning to bring practical results." In the medical library attached to the sanatorium a stethoscope turned in wood according to the design of Laennec, with separate ends for heart and lungs, can be seen alongside an original letter from Koch at the time of the discovery of the acid-fast bacillus. The unique collection of historical literature on tuberculosis was made by the late Dr. Lawrason Brown. The other day I came upon a reprint of an essay on the 'Treatment and Cure of Pulmonary Consumption,' written by George Bodington of Sutton Coldfield, England, in 1840. A review of this book in the *Lancet* of July 11, 1840 (p. 575) contains this passage:

> The measures, then, which Dr Bodington assures us have been "uniformly and completely successful in the treatment of several cases of tuberculosis consumption" are detailed in the following passages. . . . More agreeable and seductive medicaments could not certainly be found in any pharmacopœia,—fresh morning air to make the patient breathe, good wine to bring down the pulse; a good dinner to make him fat, and an opium pill to make him sleep, are all excellent remedies if they would only have the desired effect.

Surely this was just another way of saying dietetic-hygienic regime?

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To talk of "American hospitality" is superfluous—it is world-famous. We were at once accepted by our fellow students, not so much as curiosities from an untamed continent, but as their class-mates in the best American sense of the word. Being rapidly assimilated allowed us to make a smooth transition from one system to the other. We arrived in America with a European outlook and a rugged insular ideology, at times at variance with "Americanism." Gradually, by a gentle abrasive process, this attitude becomes less uncompromising and one is able to view our respective cultures more critically. The American student is three years older than his British brother and the chances are that he will marry in his junior years. Before coming to medical school he has spent four years in college, ostensibly pursuing premedical science; but from what I can gather this is the wild-oats period for most American boys. By the time he reaches medical school he is an honest citizen again, diligently pursuing his allotted tasks. There is a tendency in the clinical years to do away with systematic lectures on clinical subjects and to replace these by case-presentations (with discussion and allotted reading). In the wards even junior students are expected to take part in the house routine. This aspect has recently been accentuated by war-time needs. It has the effect of training the student early and correctly, and so prepares him well for the interneship period which is to come after graduation.

In talking of general medicine in the US I am taking a liberty, for my contact with medical practice has so far been casual. Two features strike the newcomer: the high degree of specialisation, and the antagonism to any federal health scheme on the lines of our NHI. This is reflected in the students' outlook, for even as a junior he usually has in mind some particular specialty. Hospitals here enjoy big financial endowments and have a large drainage area. This at once gives the best of them the opportunity to undertake much research and to acquire modern equipment; it also enables teaching hospitals to retain a salaried staff. In comparison British hospitals, supported by the shaky financial framework of voluntary contribution, seem to labour under almost insurmountable difficulties.

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First impressions may not be the soundest, but they are apt to be the most striking. Foremost among mine (though it be animal to say so) was food; not that I suffered from inanition in England, but no sooner had one taken ship than eggs, meat and butter suddenly became abundant. Of the Atlantic crossing, my impressions are chiefly of wondering how to pass the time till the next meal arrived, and listening to Mozart and Beethoven piano and violin sonatas played by two of our number. Our first real taste of lights at night was at Quebec, which we passed about 4 o'clock in the morning, all having tumbled sleepily out of bed to witness this spectacle. But our next lighted city—Montreal—was devoid of all thrill.

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San Francisco was unlike any other city I have ever visited—a collection of superlatives—with two of the world's largest bridges, hills and skyscrapers, blue sea and sky, and white houses with multicoloured roofs. Taken as a whole, as beautiful a city as is to be seen anywhere. My impressions of clinical training in the university to which I am attached are "learn first, practise later";

by which I do not mean to imply that theory and practice are completely divorced from one another, but rather that there is more of a tendency in that direction here than in English medical schools, where theory and practice in clinical teaching are more apt to go hand in hand The four-year system plus the interne year is, roughly speaking, based on this principle and I should hesitate to compare it unfavourably with the English system, for after all the same results are achieved in the end and there is little doubt that the training here is thorough and effective

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I was away on a brief holiday when a telephone call from London summoned me home, I had 48 hours in which to pack all my clothes for two years stay in Canada and to see to my passport, exit permit and the sundry other difficulties in the way of leaving England in war-time At the last moment we were told of the port of embarkation "Be at XY at 12 30 P M tomorrow The train leaves Z at 8 30 A M" It was then late the night before, so I finished my last minute packing and went very tired to bed After a dreary train journey, my one fellow student and I arrived at the port Perhaps there were more ships there than usual, and there was ours and was *that* going to carry us across the Atlantic? We had to give up our gas masks but were allowed to keep our tin hats On board we made rapidly for the dining saloon The first thing we saw was a bowl of oranges and other fruits It couldn't be true but it was At last we left, and the convoy began to take shape Balloons swayed above the ships and RAF planes patrolled the skies Mine-sweepers went ahead and destroyers sped hither and thither getting this and that ship into line We were at the head of the convoy and one of the vice-commodore vessels The next day we were at sea and more and more vessels joined us As soon as land disappeared the order was "Life-jackets must be carried everywhere" All obeyed, though we felt safe enough with the hum of our planes overhead We had all now recovered from the sudden surfeit of food Books were read and finished Cards were played and we got to know all the other passengers That was not very hard Sometimes our escort seemed very worried This and that vessel would be hustled into line, and messages would be flashed or flagged from ship to ship We learnt what some of these meant, but not until later, and we were glad that some of them had proved false We passed a convoy going to England, and a wonderful sight it was We learnt later that it had arrived intact, for Mr Churchill had seen it too Soon it became rather boring and we had read all the books, but we were not to be bored long Suddenly a gale hit us, our little ship pitched and tossed but stood it well, though some of us soon wished the food a little less rich and plentiful After other little excitements we finally arrived in Canada, but not where we could go ashore Four days later we left the boat Montreal is a fine city to arrive at in war-time, it sparkles with lights and there were BANANAS We sat down and ate a bunch in the hotel where the King and Queen stayed when they were there two years before I arrived in Toronto on the morning of one of their national holidays with very little money (most of it had gone on the boat), not knowing a soul and I think given up for lost by my university I acquired some nickels and telephoned no-one was in Finally, through the hospital, I got hold of someone who had heard of me—the dean of the faculty From then on things went well and for a while at least I had a roof over my head The next day I set out for the medical office and after some time, and by devious routes, I reached it It was not more than 200 yards from my front door but I did not know that when I set out Here I duly filled in the various forms required of me People seemed to be a bit wary of me at first but they soon came and asked me questions about this and that I felt rather surprised at the interest people took in the little details of the happenings in England I soon made friends with the other members of my "clinic"—firm, we would say in England People pulled my leg about my accent, but to me the Canadian accent did not sound at all strange

Work here is more concentrated than in England and there are many more examinations But I have skated, skied and played rugger, soccer, squash, tennis and many other games There are many purely Canadian games and entertainments to learn about and these are great fun One meets some very charming people about our campus I have but one complaint to make and that is that everyone thinks I am a Rockefeller scholar I am not, I am a Rockefeller student and there is all the difference in the world between the two

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SCOTTISH STUDENTS' VIEWS ON THEIR TRAINING

A REPORT representing the opinion of the four Scottish university medical schools—Aberdeen, Edinburgh, Glasgow and St Andrews—has been drawn up by the medical bureau of the Scottish National Union of Students and submitted to the BMA Medical Planning Commission. Its chief points are summarised below.

PREMEDICAL SECTION

A course in biology should replace the present courses in botany and zoology Inorganic chemistry and elementary physics should be taught at school either as part of a syllabus for the higher leaving certificate or as a special postcertificate course for intending medical students University courses would then be in organic chemistry and in applied physics taught with regard to electrotherapeutics, radiology, optics, &c

PRECLINICAL SECTION

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THE MEDICAL COURSE IN GERMANY AND ENGLAND

BY ONE WHO HAS DONE BOTH

ANY comparison between methods of medical education on the continent before the Nazis came into power and in this country must take into consideration the educational standard of the student before he enters a university. On the continent he must have spent 4 years in an elementary school followed by 9 years at at a secondary school On completion of his school course he had to pass a final examination in anything from twelve to fifteen subjects with a standard equal to the English higher school certificate This examination was the only entrance to a university, and anyone seeking admission was not ordinarily allowed to fail more than once.

During the university course the student was completely free to choose what lectures he attended and no-one was precluded from attending lectures in other faculties Every half-year (semester) one could travel from one university to another and still be eligible to qualify for an examination at any one of them No terminal or sessional examinations were ever held The only three examinations were purely oral and clinical, and corresponded in placing to the English first and second MB and the final In the preclinical course emphasis was laid on principles rather than details Systematic botany was never mentioned but osmosis, turgescence and heliotropism were discussed There was no practical teaching in botany or zoology, and zoological study was devoted to developmental theories, mendelism and physiology rather than to a detailed consideration of differences between the respiratory systems of dogfish and rabbit In physics a general outline was given, no exact knowledge of apparatus was required, no mathematical calculations ever entered into the subject and no practical work was done; the teaching of chemistry, however, was almost identical with that here. The time saved by reduced instruction in these subjects was given to more intensive tuition in anatomy, physiology, histology, neurology and embryology. Anatomy was taught in the first term, whereas here the student must pass the premedical examination before he begins it Dissection was only carried out in winter time During the first session muscles joints and bones, were studied. during the second blood-vessels, nerves and organs, whereas here all anatomical structures are dissected equally carefully from the outset The dissecting-rooms were crowded in many universities The universities are not divided into separate colleges, and consequently lectures were very crowded, often as many as 300 students attending The lack of a college life with all its implications the absence of hostels and licensed lodgings forced the students into unions corps or clubs which catered for widely different tastes These unions—some of which were given up essentially to beer-drinking and fencing others to scientific or political discussion—helped to fill the whole of the student's spare time, since they held meetings every night in the week. The absence of supervision of the personal life of the student by the university authorities meant that he took a far greater share in ordinary life.

Clinical tuition was quite different from that received in this country Students were not attached to a hospital and held no clerkships or dresserships but were merely supposed to attend lectures These lectures were essentially case-demonstrations at which the people in the front row had an opportunity to examine the patients whereas a few hundred people sitting further back merely heard the lecturer discuss the symptoms and signs of the case In surgery an operation would be performed in a huge theatre which could hold a hundred or more people A few students were called down scrubbed up, and had a chance to hold a retractor. The operator explained each step of the operation to the audience who could see very little of the actual surgery These conditions were of course better in smaller universities where the fewer people had a better chance of seeing operations as well as assisting at them Ward rounds existed but were completely useless if conducted by some famous specialist, since a huge crowd would try to surround the bed and nobody at the back could hear or see anything Attendance at outpatient departments by students was comparatively small since there was usually no demonstration attached to it, but an assistant (like an English casualty surgical officer) dealt with the casualties In midwifery the experience obtained in the labour ward was very small, since the student was only called on to be present for two or three sessions of 48 hours to assist in the deliveries, and was rarely allowed to carry one out by himself

Thus it will be seen that the practical experience obtained during the clinical years was small, while theoretical study was probably wider than that of a student sitting for his final in England The real contact between the medical man and his patient on the continent did not start until after the final examination; the successful student then had to work for at least a year as assistant in some hospital department During this period he was normally supposed to write a thesis on some subject on which he had worked and done some research. If this was satisfactory he would have the degree of Dr med. conferred on him at the termination of his assistantship Most people did some original work to acquire this degree, but many others were satisfied with passing the final examination, and after a year's assistantship went into general practice

This description applies chiefly to one large continental university; smaller ones would differ in varying degree To summarise it may be said that on the practical side, the continental system is much less thorough than the English and keeps the student from the living object of his studies; while the theoretical background, by leaving out all unnecessary details in subsidiary subjects, is more concise and more relevant to the ultimate aim of preparing the student for the final examination and fitting him for the requirements of a general practitioner

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NUTRITION AND INDUSTRY —Five lectures on nutrition and nutritional diseases, which will be of special interest to industrial medical officers, will be given at the Hospitals Centre, Birmingham during September On Sept 8 and 9 the lecturer will be Dr H E Magee, on Sept 15 and 16 Prof V. P Sydenstricker, and on Sept 22 Dr J H Sheldon All the lectures will be at 4 P M and they are open to members of the medical profession by which I do not mean to imply that theory and practice are completely divorced from one another, but rather that there is more of a tendency in that direction here than in English medical schools, where theory and practice in clinical teaching are more apt to go hand in hand The four-year system plus the interne year is, roughly speaking, based on this principle and I should hesitate to compare it unfavourably with the English system, for after all the same results are achieved in the end and there is little doubt that the training here is thorough and effective

* * *

I was away on a brief holiday when a telephone call from London summoned me home, I had 48 hours in which to pack all my clothes for two years stay in Canada and to see to my passport, exit permit and the sundry other difficulties in the way of leaving England in wartime At the last moment we were told of the port of embarkation "Be at XY at 12 30 P M tomorrow The train leaves Z at 8 30 A M" It was then late the night before, so I finished my last minute packing and went very tired to bed After a dreary train journey, my one fellow student and I arrived at the port Perhaps there were more ships there than usual, and there was ours and was *that* going to carry us across the Atlantic? We had to give up our gas masks but were allowed to keep our tin hats On board we made rapidly for the dining saloon The first thing we saw was a bowl of oranges and other fruits It couldn't be true but it was At last we left, and the convoy began to take shape Balloons swayed above the ships and RAF planes patrolled the skies Mine-sweepers went ahead and destroyers sped hither and thither getting this and that ship into line We were at the head of the convoy and one of the vice-commodore vessels The next day we were at sea and more and more vessels joined us As soon as land disappeared the order was "Life-jackets must be carried everywhere" All obeyed, though we felt safe enough with the hum of our planes overhead We had all now recovered from the sudden surfeit of food Books were read and finished Cards were played and we got to know all the other passengers That was not very hard Sometimes our escort seemed very worried This and that vessel would be hustled into line, and messages would be flashed or flagged from ship to ship We learnt what some of these meant, but not until later, and we were glad that some of them had proved false We passed a convoy going to England, and a wonderful sight it was We learnt later that it had arrived intact, for Mr Churchill had seen it too Soon it became rather boring and we had read all the books, but we were not to be bored long Suddenly a gale hit us, our little ship pitched and tossed but stood it well, though some of us soon wished the food a little less rich and plentiful After other little excitements we finally arrived in Canada, but not where we could go ashore Four days later we left the boat Montreal is a fine city to arrive at in war-time, it sparkles with lights and there were BANANAS We sat down and ate a bunch in the hotel where the King and Queen stayed when they were there two years before I arrived in Toronto on the morning of one of their national holidays with very little money (most of it had gone on the boat), not knowing a soul and I think given up for lost by my university I acquired some nickels and telephoned no-one was in Finally, through the hospital, I got hold of someone who had heard of me—the dean of the faculty From then on things went well and for a while at least I had a roof over my head The next day I set out for the medical office and after some time, and by devious routes, I reached it It was not more than 200 yards from my front door but I did not know that when I set out Here I duly filled in the various forms required of me People seemed to be a bit wary of me at first but they soon came and asked me questions about this and that I felt rather surprised at the interest people took in the little details of the happenings in England I soon made friends with the other members of my "clinic"—firm, we would say in England People pulled my leg about my accent, but to me the Canadian accent did not sound at all strange

Work here is more concentrated than in England and there are many more examinations But I have skated, skied and played rugger, soccer, squash, tennis and many other games There are many purely Canadian games and entertainments to learn about and these are great fun One meets some very charming people about our campus I have but one complaint to make and that is that everyone thinks I am a Rockefeller scholar I am not, I am a Rockefeller student and there is all the difference in the world between the two

SCOTTISH STUDENTS' VIEWS ON THEIR TRAINING

A REPORT representing the opinion of the four Scottish university medical schools—Aberdeen, Edinburgh, Glasgow and St Andrews—has been drawn up by the medical bureau of the Scottish National Union of Students and submitted to the BMA Medical Planning Commission. Its chief points are summarised below

PREMEDICAL SECTION

A course in biology should replace the present courses in botany and zoology Inorganic chemistry and elementary physics should be taught at school either as part of a syllabus for the higher leaving certificate or as a special postcertificate course for intending medical students University courses would then be in organic chemistry and in applied physics taught with regard to electrotherapeutics, radiology, optics, &c

PRECLINICAL SECTION

The teaching of anatomy and physiology is reasonably satisfactory but insufficient emphasis is laid on their use, they should be more closely correlated Surface anatomy should be more adequately taught Interpretation of normal radiograms should be taught in the anatomy department A course in embryology could be included with biology, but human embryology should be taught with anatomy In physiology the student studies normal function, with which he later compares abnormal function, occasional clinical demonstrations of cases which can be diagnosed on a knowledge of physiology would help him to make such comparisons The study of normal function should include the study of normal psychology Minutiæ should be discarded in favour of essentials

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Pathology and materia medica should be taught in close relation to subjects being covered at the same time in systematic lectures Students should have the opportunity to follow up any case in the wards which proves fatal and to study the post-mortem findings and sections Tutorial classes are especially useful in the teaching of psychology

Clinics —The number of students attending a clinic should be limited to fifteen Many more teaching clinics should be made available Some degree of uniformity should be achieved by laying down a scheme of clinical teaching Lecture demonstrations and tutorials should largely supplant lectures, and repetition should be reduced to a minimum Cinema films should be used more freely More use should be made of clinical tutors whose main function is teaching The cases seen in hospital bear too little relation to those met in general practice Scottish students have the advantage of access to outdoor hospital dispensaries, but these could be used more fully, and there should be a scheme whereby the student would experience the conditions of general practice before qualifying

Practical work —It is too easy, at present, for a student to pass through his entire course without performing any of the minor medical, nursing and surgical procedures —even without giving an enema Students should have opportunities of stitching wounds, giving injections and undertaking elementary and important nursing routine measures Students should also obtain full experience in giving anæsthetics, this would be of more benefit to him than the long hours spent in watching operations

Midwifery and gynæcology —Practical experience should begin early and be sustained It should be compulsory for students to deliver abnormal as well as normal midwifery cases

Pædiatrics, Special subjects —Diseases of children, midwifery and fevers form a large part of medical practice, and more time should be spent in their study. In teaching special subjects the emphasis should be on practical work.

Public health and forensic medicine—General principles rather than administrative and academic detail should be taught, additional knowledge is acquired by the doctor when he graduates. Interest can be increased by visits paid for example to sewage farms or law courts.

Additional courses should be given in such subjects as the history of medicine, conduct of general practice, sociological relations of medicine and medical ethics.

Student residentships—It would be difficult to arrange a system whereby every student could act as a resident for any appreciable period without sacrificing time needed for private study. The experience gained would be valuable, but experience of general practice would be even more valuable. Every graduate should be compelled to spend six months—preferably a year—in hospital work before being allowed to practise on his own.

GENERAL CONSIDERATIONS

Psychology—The practitioner should be better equipped to diagnose mental disorder early, but psychotherapy and psychiatry are still the field of the specialist and should not take their place as yet in the medical curriculum. A short series of lectures on normal psychology is desirable during the physiology course, to be followed some time during the clinical years with lectures on general psychopathology.

Entry to the faculty—No candidate should be deterred by financial embarrassment from entering the medical school of his choice. There should be equal opportunity for the sexes, and any discrimination against women on grounds of economy or lack of facilities is undesirable. Six years is the optimum length of the course, with entry at the age of 18½. Vacations at present seem disproportionately long; 8–12 weeks a year should be ample.

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ANY comparison between methods of medical education on the continent before the Nazis came into power and in this country must take into consideration the educational standard of the student before he enters a university. On the continent he must have spent 4 years in an elementary school followed by 9 years at a secondary school. On completion of his school course he had to pass a final examination in anything from twelve to fifteen subjects with a standard equal to the English higher school certificate. This examination was the only entrance to a university, and anyone seeking admission was not ordinarily allowed to fail more than once.

During the university course the student was completely free to choose what lectures he attended and no-one was precluded from attending lectures in other faculties. Every half-year (semester) one could travel from one university to another and still be eligible to qualify for an examination at any one of them. No terminal or sessional examinations were ever held. The only three examinations were purely oral and clinical, and corresponded in placing to the English first and second MB and the final. In the preclinical course emphasis was laid on principles rather than details. Systematic botany was never mentioned, but osmosis, turgescence and heliotropism were discussed. There was no practical teaching in botany or zoology, and zoological study was devoted to developmental theories, mendelism and physiology rather than to a detailed consideration of differences between the respiratory systems of dogfish and rabbit. In physics a general outline was given, no exact knowledge of apparatus was required, no mathematical calculations ever entered into the subject and no practical work was done; the teaching of chemistry, however, was almost identical with that here. The time saved by reduced instruction in these subjects was given to more intensive tuition in anatomy, physiology, histology, neurology and embryology. Anatomy was taught in the first term, whereas here the student must pass the premedical examination before he begins it. Dissection was only carried out in winter time. During the first session muscles, joints and bones were studied; during the second blood-vessels nerves and organs, whereas here all anatomical structures are dissected equally carefully from the outset. The dissecting-rooms were crowded in many universities. The universities are not divided into separate colleges, and consequently lectures were very crowded, often as many as 300 students attending. The lack of a college life with all its implications the absence of hostels and licensed lodgings forced the students into unions corps or clubs which catered for widely different tastes. These unions—some of which were given up essentially to beer-drinking and fencing, others to scientific or political discussion—helped to fill the whole of the student's spare time, since they held meetings every night in the week. The absence of supervision of the personal life of the student by the university authorities meant that he took a far greater share in ordinary life.

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This description applies chiefly to one large continental university; smaller ones would differ in varying degree. To summarise, it may be said that on the practical side, the continental system is much less thorough than the English and keeps the student from the living object of his studies; while the theoretical background, by leaving out all unnecessary details in subsidiary subjects, is more concise and more relevant to the ultimate aim of preparing the student for the final examination and fitting him for the requirements of a general practitioner.

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POSTGRADUATE STUDY IN LONDON

DURING the year facilities for postgraduate teaching had improved a little with the reconstitution of the bombed hospitals and the return of the population to London Doctors are so scarce, however, that the Priority Committee proposes the suspension, during the war, of "all medical postgraduate courses which require whole-time attendance of medical men and women for a considerable period" The Minister of Health has acceded to this recommendation and has asked deans to bring it into operation The courses planned for the coming year are thus likely to be considerably modified in practice, and the following account outlines what was intended rather than what will be performed The Minister takes the view that any student who could attend a full-time course of instruction, even though he may be unfit or ineligible for military service, should undertake work which would release another practitioner to serve with the Forces

The undergraduate medical schools still provide opportunities of work for higher examinations for their own graduates Most schools and hospitals which take postgraduate students in peace-time fall into one of three groups

(A) Those hospitals which are carrying on much the same teaching facilities as before the war

(B) Those hospitals which, as a result of bomb damage or the need for reserving beds for the EMS, have little or no facilities for inpatient teaching, but which continue to teach in outpatient departments, and still offer resident appointments, in some of these selected students can be taken on as clinical assistants and in most of them hospital practice is available by arrangement with the dean

(C) Those hospitals which have had to suspend postgraduate teaching altogether, but which still appoint resident officers and in some cases clinical assistants

The refresher courses for insurance practitioners organised by the Ministry of Health before the war are still suspended, but equivalent instruction is still provided in London by a programme selected from the activities of the various departments of the British Postgraduate Medical School, and to a large extent by practice at the Prince of Wales's, Hampstead General, and Metropolitan Hospitals

GENERAL HOSPITALS

At the British Postgraduate Medical School (group A), although the number of beds is reduced and the full-time staff depleted by the Services, teaching is continuing on prewar lines The ordinary programmes are being carried on in medicine, surgery, obstetrics and gynæcology, and pathology, and the principle is maintained of continuous teaching by the ordinary British methods of bedside tuition and lectures rather than by specific courses The teaching is of a high standard, suitable both for those who merely wish to improve their knowledge and for candidates for higher examinations Special courses on war medicine, fractures, war surgery of the chest, the nervous system, the extremities and abdomen, and on operative surgery, are held in rotation on alternate weeks These intensive courses last a week, to suit the needs of officers in the Services They are advertised in advance in the medical papers, fees are 1 guinea a week for ordinary students and for special courses, except for the fracture course for which the fee is 5 guineas Officers of the forces and of the EMS can be admitted free It is proposed, if circumstances permit, to start the special course for the London University diploma in clinical pathology in October A limited number of students can be given a fortnight's special tuition in anæsthetics, the fee being 3 guineas

The Prince of Wales's, Hampstead General and Metropolitan Hospitals fall into group B, and the Royal Northern, the National Temperance and Queen Mary's Hospital, Stratford, into group C

SPECIAL COURSES

Public health.—At the Royal Institute of Public Health and Hygiene all work, including the course for the D P H, is being carried on normally The annual congress, however, is not being held The course for the D P H of London University usually held at the London School of Hygiene has been suspended Special weekend courses on factory medical services and industrial diseases, however, are held periodically

Psychological medicine—A D P M course is held annually at the Maudsley Hospital (University of London) in the early months of the year In January and February lectures and practical instruction are given on the anatomy and physiology of the nervous system and on psychology, covering part I of the D P M syllabus From March to May inclusive the lectures with clinical demonstrations cover all aspects of psychiatry and mental deficiency, and clinical instruction in psychiatry and neurology complying with the requirements of the examining bodies is also arranged Lectures and demonstrations are also given on neuropathology Since the war the Maudsley Hospital has been emptied of patients and the clinical staff located at the Mill Hill and Sutton Emergency Hospitals, and the clinical instruction in psychiatry is given at these hospitals and also in the London County Council mental hospitals and institutions for mental deficiency Teaching is given in those developments of psychological medicine which have become prominent during the war, such as the clinical application of psychological testing, appraisal of psychometric data, vocational selection, prognosis in traumatic and other neuroses and short methods of treatment Apart from the D P M course clinical instruction in war neuroses and other aspect of psychiatry is continuous throughout the whole year at Sutton and Mill Hill Emergency Hospitals Information can be obtained *from the Honorary Director of the medical* school, Central Pathological Laboratory, West Park Hospital, Epsom, Surrey

Most of the regular training courses at the Tavistock Clinic are in abeyance, the greater part of the staff being engaged in training, research and administrative work in the Services, and the time of the remainder fully occupied with clinical work Doctors have come for individual training, 5 were in training this year, and applications for such training will be welcomed The need for child psychiatrists is at the moment particularly urgent Others have come for training in mental testing, a course attended by 30 doctors has just ended, and applications for individual training in this subject will be favourably received Medical students who intend specialising in psychiatry may consider taking such a course

The course for the diploma in psychology of the University of London is being held at the London School of Hygiene and Tropical Medicine

Tropical Medicine—A diploma in tropical medicine is required by those seeking medical appointments in the tropics Courses of instruction are given at the University of Edinburgh, the Liverpool School of Tropical Medicine [1] and the London School of Hygiene and Tropical Medicine [2] Courses will be held alternately in London and Liverpool for the present, provided there are sufficient applicants The next course, which should begin in September, is to be held in Liverpool but the date is not yet fixed Intensive courses in tropical medicine and parasitology each lasting a fortnight are being held both at Liverpool and at the London School of Hygiene and Tropical Medicine These are mainly for officers of our own and the Allied Services, but civilians may also attend

Neurology—At the National Hospital, Queen Square (B), hospital practice is available to selected clinical clerks (5 guineas for three months, 7 guineas for six months), and outpatient clinics are held each morning at 11 A M, on Monday to Friday (1 guinea for one month, 2 guineas for three months) The West End Hospital (B) holds special classes—consisting of demonstrations of cases with commentaries—for a month four times a year, before each M R C P examination The Maida Vale Hospital (B) provides hospital practice, and may be continuing D P M teaching if it is needed

Heart and lungs—At the Brompton Hospital (B) limited hospital practice is available, and courses are held in preparation for the M R C P and Conjoint examinations The Royal Chest Hospital (B) provides outpatient practice and special courses on heart diseases in conjunction with the Fellowship of Medicine The London Chest Hospital, Victoria Park (B) has been re-established, after the damage it sustained, and provides facilities for hospital practice in all chest diseases including tuberculosis It has a country branch at Camberley Surrey

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[1] Details may be obtained from the Laboratory Secretary, Liverpool School of Tropical Medicine Pembroke Place

[2] Details may be obtained from the Dean, London School of Hygiene and Tropical Medicine, Keppel Street, W C 1

Children—The Hospital for Sick Children Great Ormond Street (B) is providing limited postgraduate instruction, special consideration will be given to candidates for the diploma of child health The Queen's (C) and Princess Elizabeth of York (C) Hospitals have suspended postgraduate teaching

Maternity—Queen Charlotte's (A) is still offering facilities at Hammersmith subject to war-time conditions The City of London Hospital (C) has been damaged and teaching is still suspended Hospital practice in the maternity department of the British Postgraduate Medical School is available

Cancer and radiology—At the Royal Cancer Hospital (A) teaching continues as before the war. Special courses are held for the final F R C S, both in surgery and in operative surgery, and postgraduate courses are held qualifying for the diplomas in medical radiology of London University and of the Conjoint Board The Mount Vernon Hospital (B) offers hospital practice in its hospital at Northwood; 50 beds are reserved for cancer cases and this number is likely to be increased Additional cancer cases are received under the EMS scheme

Ophthalmology—The Royal London Ophthalmic Hospital (A) is carrying on as usual at Moorfields The Central London (B) continues as usual, except that no special courses are being held

Ear nose and throat—At the Royal National Hospital (B) hospital practice is available but no special courses are held The Metropolitan Hospital (A) is continuing its teaching and classes on outpatients in London and Watford, but all inpatients are transferred to the EMS base hospital Golden Square Hospital (B) provides hospital practice

Orthopædics—The Royal National Orthopædic Hospital (B) has suspended teaching, but the outpatient department is open to postgraduates

Genito urinary and rectal diseases—The London Lock Hospital (A) continues to provide instruction for postgraduates who wish to obtain the 130 hours' instruction required by the Ministry of Health for a special certificate, and teaching facilities generally continue unaltered Hospital practice is available in the outpatient department of All Saints (B) and St Paul's (B) At St Peter s Hospital (B) practice is available in the outpatient department Special courses are held at Colindale on behalf of the Fellowship of Medicine which makes arrangements if there are a sufficient number of applicants.

Skins—Limited hospital practice is available in the outpatient department at the London School of Dermatology (B) and there is a regular teaching session in outpatients at the British Postgraduate Medical School on Thursdays at 2 P.M.

Infectious Disease in England and Wales

WEEK ENDED AUG 15

Notifications—The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever 1332, whooping-cough, 1125, diphtheria, 665, paratyphoid, 13, typhoid, 15, measles (excluding rubella), 4983, pneumonia (primary or influenzal) 440, puerperal pyrexia, 175, cerebrospinal fever 70; poliomyelitis 15, polio-encephalitis, 3, encephalitis lethargica, 2; dysentery, 51, ophthalmia neonatorum, 76 No case of cholera, plague or typhus fever was notified during the week

Deaths—In 126 great towns there were no deaths from scarlet fever or enteric fever, 4 (0) from measles 4 (1) from whooping-cough 15 (1) from diphtheria, 34 (2) from diarrhœa and enteritis under two years, and 11 (1) from influenza The figures in parentheses are those for London itself

Manchester Newcastle-on Tyne and Birmingham each reported 4 fatal cases of diarrhœa and in the same week there were 12 deaths from that disease in Glasgow

The number of stillbirths notified during the week was 219 (corresponding to a rate of 36 per thousand total births), including 18 in London.

OUR thanks are due to deans of medical schools and university officers, to government and municipal officials, to various groupings of students, and to all others who have helped us to give a lively account of medical education in war-time

Reviews of Books

Life and Teaching of Sir William Macewen

A chapter in the history of surgery A K BOWMAN, M B Glasg, regional medical officer to the Department of Health for Scotland. London· William Hodge Pp 425 21*s*

IT is now eighteen years since Macewen died Dr. Bowman gives him place with Harvey, the Hunters, Pasteur and Lister, and regards his contributions to surgery as made to the whole field of medicine Macewen's boyhood was spent on the island of Bute He became a student of Glasgow University where in after years he was to be regius professor At the outset of his career he was hard put to it to make a living, and he worked for eighteen years at the Royal Infirmary before he migrated to the Western in 1892 They were strenuous years His housemen of the eighties still recall with vivid weariness those long night operations, finishing in the small hours, which never seemed to affect Macewen At nine o clock next morning he would be back possessed by his demon of insatiable energy. There were long Sundays in the wards, too, with no break for luncheon He worked as an individual himself the team rather than the member, but helped nevertheless by his succession of devoted assistants His contributions to surgery were launched into a surgical world which his biographer helps us to visualise When he accepted the chair of surgery the creative phase of his life drew to a close, the surgeon and experimenter gave place to the teacher, and his formidable energy was at the service of his students The last ten years of his life were distinguished by war service and presidency of the British Medical Association If it is not always easy, in this biography, to see the man through his works it must be borne in mind that Macewen—perhaps thanks to his intellectual stature—was difficult to understand Dr Bowman s careful research has covered all his scientific and practical achievements his more personal side remains as elusive as it did in life

Demonstrations of Physical Signs in Clinical Surgery

(8th ed.) HAMILTON BAILEY, FRCS Bristol John Wright and Sons Pp 336 25*s*

THIS book has proved its value to the medical student The work is familiar to most of us · it covers the various regions of the body, detailing and illustrating physical signs and explaining their significance More signs are described in it than could be seen in a year in a surgical ward There has been no great change in the general form of the book To each chapter new facts and illustrations have been added which increase its worth to the surgical novice In spite of the loss of many illustrations through enemy action, Mr Bailey, with the assistance of Miss K C Clark, has reproduced most of the fine illustrations with which we are familiar, and, in spite of the modern cult of austerity, has added some coloured photographs The book impresses on the student the value of using his own senses in the diagnosis of surgical disease

Diseases of Women Ten Teachers

(7th ed.) Editor CLIFFORD WHITE, MD Lond, FRCP, FRCOG London Edward Arnold. Pp 435 18*s*

THE seventh edition of this work is a great improvement on what was always a good reliable textbook for the final conjoint and university degrees The retirement of Dr J D Barris and Mr D W Roy has left two vacant places on the editorial committee which have been filled by Mr John Beattie and Mr Douglas MacLeod There has been some rearrangement of the chapters and a few additions A useful chapter on neurasthenia and neurosis in relation to pelvic disorders, and a short section on birth-control, are commendable adjuncts the need of which students and reviewers in the past have stressed The account of the anatomy and physiology of the pelvic genital organs has been carefully rewritten, the anatomy is clearer and better illustrated than before and the chapter on physiology if a little sketchy is adequate In the eighth edition when it comes, the phases of the endometrial cycle might be correlated with the cyclical changes in the ovary Students who use this type of book find it difficult to grasp a true picture of the endothat in order to obtain the best results a similar method should be employed. There is no doubt that the substitution of some form of desoxycholate agar for MacConkey's medium results in the more frequent isolation of the pathogen and should therefore be used whenever circumstances allow. I always recommend this technique to those Service doctors to whom I lecture before they proceed overseas, and I think this is an important topic which cannot fail to interest all doctors now in tropical countries where they will find bacillary dysentery second only in importance to malaria.

RAF Institute of Pathology and Tropical Medicine. A. C. T. VAUGHAN.

THE TEACHING OF SOCIAL MEDICINE

SIR,—By social medicine is meant the practice of medicine which goes outside technical medicine and takes note of the patient as a social unit and as an individual. That is, social medicine tries to ensure that the patient understands, cooperates, has confidence and receives due attention; it also tries to prevent disease and to see that a cure is not invalidated by home or working conditions. Doctors have not altogether failed in putting these principles into practice in the past, but far more can be done, and especially far more can be *taught*. Everyone probably agrees that medical reform is desirable. But the need and importance of teaching the principles and practice of social medicine in our hospitals has yet to be widely discussed. Concrete education and practice are required. Some of the following suggestions could be put into practice overnight; others imply reform of hospital teaching and the curriculum.

Attendance at public health lectures, tuberculosis dispensary, the various special clinics and district midwifery practice will lay a foundation. But there are specific problems. Is 6 months convalescence from acute nephritis possible for this patient? Is it worth operating on a hernia if the patient lives up 60 stairs with no lift? How is a man "rehabilitated"? Where should a child with tuberculous glands be sent? These require more intimate and practical discussion, which could be achieved in several ways: by discussion at outpatients, the almoner being called in perhaps at the end to discuss patients and answer questions about them; by discussion on ward rounds, the almoner perhaps accompanying the round (or the round might end in her office); by seminars or conferences where patients with important social relations could be interviewed and discussed; by field work while clerking, every student making a special study of his own cases; by home visiting, visits to factory or office, and meetings with the family, employer and private doctor; by attending the almoner's office (not more than one or two at a time) and watching the ordinary practice there; by apprenticeship to general practitioners or dispensaries where the importance of social background can be learnt; by having a teaching staff which constantly provokes, and is capable of answering, questions about these things; by official outings to sanatoria, health centres, mental hospitals, rehabilitation centres, nursing homes, special hospitals and the like. The almoner is the hospital specialist in social medicine and will have to be consulted about planning workable schemes.

Part of the patient's confidence and cooperation depends on the personality of the doctor, but if he has to wait hours for attention, or has been curtly dismissed after a few words at the end of it, or if he cannot have a personal and private word with the doctor, or feels herded about, or is treated as an irresponsible nitwit, or is pummelled by students unexpectedly and against his will, or if he neither understands nor has been asked to cooperate in the treatment, his confidence is not going to be at a maximum; and students taught in surroundings where this can happen are not going to turn into perfect practitioners. That this has some weight is shown by two things. First, the reaction of the fresh student on witnessing such happenings—some surprise, if not dismay and disgust, is always felt; by custom the unpleasantness wears away (for the student), but for the new patient it is always acute. Secondly, the fact that very few of those running a teaching hospital would be willing for their close relations and friends to go in as ordinary patients, simply because it is too rough and unpleasant. The ideal must be to produce a hospital to which the staff would be willing to send their own families. Some reforms are clearly needed: an appointment system to save patients from waiting about in outpatients; more staff with more time and more space to work in, so that fuller attention can be given to patients; clear advertisement that the hospital reserves the right to teach on any patient admitted, or preferably the expressed recognition of a patient's right to refuse to be taught on; a limitation, adhered to in practice, on the number of students examining any patient, particularly if he is very ill or in pain. It is commonly objected that no patient has any right to mind a little discomfort considering what expert treatment he receives. But the doctor is trying to eliminate that discomfort so that his treatment may be still more effective and so that the teaching of the human approach is not negatived in practice. Given such hospital organisation, and a suitable teaching staff, it would follow naturally, without lectures, seminars or the like, that the students of that school would treat a patient as an individual in his own right and not as a bag of physical signs.

The most obvious difficulty about all these proposed reforms is the time they would consume. There is little which is not essential in medical education as it stands; the only way of making room for anything more is by expansion. The two fundamental hindrances to this are financial and psychological. Already the medical student has a heavy monetary burden: there are many reasons why the state should—by one channel or another—relieve him of it, at least in the latter part of his training. Apart from financial worry, there is the impatience and boredom which the senior student feels when he is always learning, never doing anything responsible, and of course the longer the curriculum the worse that boredom will become. It could be mitigated by giving students some responsibility at this stage—by letting them work under a general practitioner, or at a dispensary, or with a research team, or arranging for them to take student house jobs.

MEDICAL STUDENT.

THE ILLITERATE STUDENT

SIR,—Your peripatetic examiner who complains of the jargon written in exam papers by medical students should study a few of the textbooks which they have to read. Can you beat this from Gray?

> The extremities or limbs are four in number: a *superior pair* subservient mainly to prehension; and an *inferior pair*, intended for support and locomotion. Both pairs are constructed after a common type, but certain functional differences are observed between them. In the upper limb mobility is the prime consideration, and stability may be endangered in order that the requisite degree of mobility may be obtained. The reverse is the case in the lower limb, where stability must be assured even at the expense of mobility.

I do not think his complaint is justified. Under the stress and worry of an examination one cannot always be bright and think clearly. Surely it is not essential in a practising physician to be able to explain in words of one syllable how the body works. To know how it works is more important. I suspect the examiner of being a research student—i.e., one in a state of arrested development, unfit to judge someone who is going to be a real doctor.

PERIPATETIC DOCTOR.

SIR,—Two peripatetic correspondents have recently written of the illiteracy of medical students. The second correspondent complains of their "smoke-screen of words." May one dare to guess that behind this correspondent's own smoke-screen of verbosity lurks an examiner in physiology—perhaps even the author of one of the many textbooks crowded with the trite, meaningless and incomprehensible phrases of which he complains? He confesses to a hunch. He must be speaking anatomically and has our sympathy, for this purist could never descend to the argot of the Bowery. It is easy to attack the defenceless medical student. Most of them have been doomed from early years to be trained by those who are, by implication, condemned by your correspondent: only a small proportion have had the advantage of being educated. Would he not achieve greater results if he directed his missionary enthusiasm to fellows of the various colleges who are the authors and editors of the phrases of which he complains?

PERIPATETIC STUDENT.

THE COUNTRY HOSPITAL

SIR,—" Students, like children and monkeys," said one of your peripatetic correspondents who wanted country hospitals—and I suppose we are *Nihil animalis a me alienum puto,* and I once saw an honorary throw a placenta at the wall where it stuck, quivering But the monkey-like irritation caused by his classification has prompted me to point out that there really are student-objections to the country hospital Not big objections, although it is inconvenient to have to do inpatients in the country and outpatients in London But such points as that it is, for some reason, cheaper to look after yourself in London than to be looked after in a hostel out of it, that in the country you never see your non-medical friends whereas in London you do, that to have to rely on the medical school library is to realise its inadequacy It's all quite trivial, and I don't see why the hospital, which is for the patients, should mind either way; but I'm not sure that either students, children or monkeys are always as easily led as your correspondent believes I expect he has a way with him And, incidentally, this matter of the patients' preferences Most hospital patients are in bed, so certainly they must like pleasant wards and a nice interesting view out of the window The country's interesting, if the next hut isn't in the way, but so is the shipping on the Thames, or a crowded street, or a children's playground The idea of a country hospital is to combine healing with holiday, presumably, but surely the average hospital patient's idea of a holiday haunt is sometimes a town and almost never a series of huts surrounding a converted white elephant ?

CAND MED

Notes and News

SCIENTIFIC FILMS

FIGHTING, working and living have today become so technical that every citizen must become a scientist if the war is to be won speedily and efficiently Scientific method is needed in production, on the food front, and on the battlefield, and the film, itself fundamentally scientific in material and method, offers a good way of interpreting science to the ordinary citizen

The first scientific films conference, held at the Institute of Mechanical Engineers on August 16, was called by the Association of Scientific Workers, Mr ARTHUR ELTON, chairman of the London Scientific Film Society, presided Dr L KLATZOW, in the absence of Dr J A Lauwerys, spoke on the place of science films in adult education and the training of technicians He pointed out how advances in science are related to technical inventions bacteriology, for example, could never have developed without the microscope, and the film is a new medium for disseminating knowledge Inspired teachers are few and their audiences are necessarily limited in numbers, but with technical cooperation a teacher can teach a world-wide audience of millions through a film The camera can be used to modulate space, time, speed and size, and can therefore present to the audience aspects of a phenomenon which no human eye could observe directly Although slow motion and microcinematography are now familiar to lay audiences, a totally inadequate use of these processes has been made in medical education Nor has the Ministry of Labour made much use of films in industry The position is very different in the United States and the Soviet Union where many films of technical processes in industry and on Army training are freely employed The Ministry of Information has produced some excellent propaganda films, but could make more use of scientific films Films showing the relation of parts to the whole can greatly increase the interest of workers engaged in mass production by demonstrating how each step leads on to the finished product—of which they may have had no clear idea

Mr PAUL ROTHA said that the public were largely scientifically illiterate As a result of the magical "believe it or not" attitude to science in commercial films the ordinary person's conception of science was of bubbling retorts or rockets to the moon A few films, he said, deal reasonably with the lives of scientists such as Ehrlich or Pasteur, but the only film about a British scientist is the life of Michael Faraday, sponsored by the British Council Scientists need propaganda films to shatter the secrecy surrounding their work, and relate it to people's lives Such films must be directed to those who have power to apply science to our daily needs, to the public so that they may know what benefits science has to offer, to the specialist who needs to know how science affects his work in the public interest, and to the scientist himself so that he may know what his fellow scientists are doing Films must range from dramatic persuasion to accurate recording, according to need and purpose The present trouble is he thinks, that one kind of film is often supposed to do all jobs and thus succeeds in doing none

The relation of films to other forms of education was discussed Wireless is used more freely for education in America than in this country, television is a synthesis of film and radio, and opens up new educational perspectives A useful suggestion was that there should be a mobile film unit to record important scientific work in progress A resolution welcoming the setting up of a national Scientific Film Federation, to act as liaison between the existing or projected associations, and to forward national planning and execution was passed unanimously The conference ended with the showing of Paul Rotha's film on blood transfusion an example of the well-produced and informative " documentary "

MD CANTUAR

IN the Middle Ages the Pope had the right to grant academic degrees independently of the universities, and in England he exercised this right through the Archbishop of Canterbury After the Reformation this privilege of the see of Canterbury was reaffirmed by act of parliament and the archbishop was authorised to continue the custom—at the modest price of £4 a degree —for " causes not being contrary or repugnant to the Holy Scripture and Laws of God " This right has never been abrogated, but the status of Lambeth graduates has always been a little unsettled, and in 1722 it was seriously challenged by the Bishop of Chester who refused to admit a BD of Lambeth to the wardenship of Manchester College The courts upheld the archbishop's graduate, but since then it has usually been considered tactful to confer the degree on people who were already graduates of a university Mr R Coleman and Dr Allen Daley's paper at the RSM section of history of medicine of June 3 has been stimulating further research about these degrees of the mitre and a correspondent who has been browsing among back numbers of the *Gentleman's Magazine*[1] writes to tell us of some early medical recipients R Thoroton, MA, of Christ's College, Cambridge, who in 1646 had obtained a licence from the university to practise physic, was granted an MD Lambeth on Oct 31, 1663 Others who received medical degrees in that year were W Fyffe, MA, of Trinity College, Oxford, E, Freeman of Cambridge and P Dakyn who held an MB from an unspecified university Sir Edmund King became MD Lambeth in 1671, and Peter Dent who practised in Cambridge as an apothecary was granted an MB in 1678 With the passing of the Medical Act in 1858 Lambeth degrees of course ceased to be a qualification to practise and since that date only three have been granted—two in 1861 and one in 1862.[2] The last MD Cantuar, William Sharp, FRS, of Rugby, who also held the qualifications of MRCS and LSA, died in 1896 at the age of 91

DIRECTORY FOR THE DISABLED

THE Central Council for the Care of Cripples has published a booklet[3] which will be welcomed by every citizens' advice bureau, hospital almoner or social worker dealing with the physically handicapped It sets out the statutory services available under the Assistance Board, the Board of Education, and the Ministries of Health, Labour and Pensions, the voluntary services provided by the Central Council itself and other agencies, the care offered to the physically defective child, the disabled Service man or woman, the air-raid casualty the industrial worker, and the disabled civilian The appendix gives the addresses of all the agencies sharing in the care of the disabled throughout Great Britain, the homes for crippled children and adults, the orthopædic hospitals and centres, the fracture departments, the employment exchanges connected with EMS hospitals, the Ministry of Pensions hospitals and limb-fitting centres, and the training centres for the physically disabled All this useful information is pleasantly spaced on the pages and easy to follow The council invites suggestions for additions and alterations in future editions

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[1] 1864 16, pp 504 633, 770

[2] *Lancet* 1920, i 941

[3] Disabled ? Enquire Within' Central Council for the Care of Cripples, 34 Eccleston Square, London, S W 1 Pp 55 1s

Medical Casualties

The following casualties have been announced

Wounded —Captain A B Waters, MRCS, RAMC, and Captain L G Hannah MB NZ, RAMC

P of W —WS/Captain H C Allan, MB EDIN, RAMC, Captain F J Fish, MRCS, RAMC, WS/Captain D R MacAulay, MB ABERD, RAMC, T/Major K A Moore, FRCS, RAMC, Major E J Pryn, MRCS, RAMC, T/Major H L Thornton, MRCS, RAMC, A/Surgeon Commander H L Cleave, FRCS, RN, Surgeon Lieut Commander W D Gunn, LMS NOVA SCOTIA, RN, T/Surgeon Lieutenant C A Jackson, MB LOND, RNVR, Surgeon Lieut Commander J A Page, MB DUBL, RN, Surgeon Commander R W H Tincker, MRCS, RNVR, and T/Surgeon Lieutenant R G S Whitfield, MRCS, RNVR

Norman Gamble Fund and Research Prize

Applications for this prize and for grants in aid of research work should be sent to the secretary of the Royal Society of Medicine, 1, Wimpole Street, London, W 1, not later than Sept 30

Register of Speech Therapists

The Board of Registration of Medical Auxiliaries have issued a register of speech therapists Medical practitioners, and hospital and educational authorities may obtain free copies from the secretary of the board, BMA House, Tavistock Square, London, W C 1

SIR HENRY DALE, PRS, who was recently appointed a member of the governing body of the Lister Institute of Preventive Medicine, has been elected by the board as its chairman

Appointments

BRODIE, W H, MB ABERD, DPH temp asst MO for Willesden

DAVIS, W B, MD BELF, DPH director of clinical research laboratory, Victoria Infirmary, Glasgow

HARKER, MARGARET E, MB LOND temp asst MO for Ealing

Births, Marriages and Deaths

BIRTHS

BEACH —On Aug 17, at Leintwardine, Bucknell, Salop, the wife of Surgeon Lieutenant Alan Beach, RNVR—a son

BELL —On Aug 19, at Esher, the wife of Mr Arthur C Bell, FRCS—a son

COOMBS —On Aug 11, at Newcastle on-Tyne, the wife of Captain N C Coombs, RAMC—a daughter

LITTLE —On Aug 18, at Woking, Surrey, the wife of Dr G Mellanby Little—a daughter

McOWAN —On Aug 16, at Wellington, Shropshire, the wife of Surgeon Lieutenant B M McOwan, RNVR—a son

MOIR —On Aug 18, at Oxford, the wife of Prof J Chassar Moir, FRCOG—a daughter

MURPHY—On Aug 15, in London, the wife of Dr F D Murphy—a son

REINOLD —On Aug 19, at Sevenoaks, the wife of Surgeon Lieutenant Duncan Reinold, RNVR—a daughter

SOUTHERN —On Aug 16, at Chester, the wife of Lieutenant Dick Southern, RAMC—a son

STEVENS —On Aug 16, in Cairo, the wife of Major C P Stevens, RAMC—a daughter

STOTT —On Aug 21, the wife of Dr N K Stott, of Chobham—a son

MARRIAGES

LAYBOURNE—PIKE —On Aug 8, in London, Maxwell N Laybourne, MRCS, lieutenant RAMC, to Dorothy Joan Pike

DEATHS

BASDEN —On Aug 20, at Taunton, Harold Stevens Basden, MRCS formerly of Crowborough, Sussex, and of Brooke, Norfolk

BIRCH —On Aug 19, at Chipping Campden, Charles Birch MRCS

BLAKEMAN —On Aug 21, at Wonersh, Charles John Blakeman, MRCS, formerly of Cranleigh, Surrey

BODKIN —On Aug 14, at Ringwood, Hants, Herbert Alfred Bodkin, FRCSE, DO, aged 61

BOWLE-EVANS —On Aug 23, at Cheltenham, Charles Harford Bowle Evans, CMG, CBE, MC, MB CAMB, DPH, major general IMS, retd, aged 74

CAMPBELL SMITH —On Aug 22, at Wimbledon, Peter Colin Campbell Smith, MD DURH aged 80

HARRIS —During August, by enemy action, John Richard Glanfield Harris, MB CAMB, D A

JACKSON —On Aug 19, at Holtye, Cowden, Kent, Frederick Douglas Selmes Jackson, MRCS, formerly of Harley Street, W 1

JAMIESON —On Aug 15, at Falmouth, Robert Jamieson, MD GLASG, aged 76

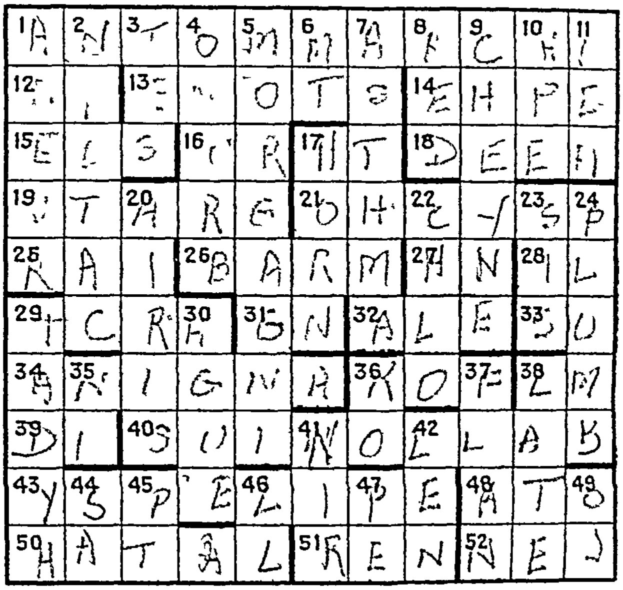
LUNN —On Aug 19, John Reuben Lunn, OBE, FRCS, of Worthing, aged 87

MACPHERSON —On Aug 14 Sir John Macpherson, CB, MD EDIN, FRCPE of Cleeve, near Bristol

RICHARDSON —On Aug 20, in London, Alfred Henry Richardson, MB CAMB, FRCS, of Danby, Yorkshire

OSLERIANA

(All italicised clues are to be found in Osler's "Principles and Practice of Medicine," eleventh edition)



1 A	2 N	3 T	4 O	5 M	6 M	7 A	8 R	9 C	10 H	11 I
12	I	13 E	N	O	T	S	14 E	H	P	E
15 E	L	S	16 U	R	17 U	T	18 D	E	E	H
19 V	T	20 A	R	E	21 O	H	22 C	Y	23 S	24 P
25 R	A	I	26 B	A	R	M	27 H	N	28 I	L
29 T	C	R	30 A	31 G	N	32 A	L	E	33 S	U
34 A	35 N	I	G	N	A	36 R	O	37 F	38 L	M
39 D	I	40 S	U	I	41 N	O	42 L	L	A	B
43 Y	44 S	45 P	E	46 L	I	47 P	E	48 A	T	49 O
50 H	A	T	A	L	51 R	E	N	52 N	E	D

ACROSS

1	*Napoleon's physician*
12	35dn
13rev	*Montaigne's complaint*
14rev, 39rev	May be prolate or oblate about 36dn
15rev	" —*start," when compensation is broken with 47 rev*
17	See 36
18	Shakespeare's opinion
19rev	Felicitate with 38 dn
21rev	*Korsakoff speaks of one as polyneuritica with 23*
25, 28rev, 31rev	Reproachful and insulting language
26	Froth on 32
27	*See 8dn*
29rev, 16, 33rev	The Bear Ward
32	Such a wife is a fish allied to shad
34rev	*Its victims included Charcot, Nothnagel and William Pepper*
36rev	*Oarsman who died in a race between 51 and 17 ac rev*
38	e g Old Hundredth
40rev	*The French Hippocrates*
43rev	*Julius Caesar and Napoleon suffered from it*
48	Encloses lagoon with 46
50rev	*Produced the ' Jumping Frenchmen "*
52rev, 51rev	*Was advised, " Do not think, but try, be patient, be accurate "*

DOWN

1, 11	*Antyllos devised an operation for it*
2rev	*Wrote " Shut your mouth, and save your life "*
3bis	Cryptadia
4rev	Sylvie's partner
5	*Had fifteen children with same complaint*
6	Mount and remove contents
7	*O. W Holmes' slight ailment that promotes longevity*
8, 37, 42rev	*The son of Edward I was treated with this by 49rev with 27 of Gaddesden*
9	*Said " Milk is Blood "*
10rev, 36rev	Class of magistrates
17	Adjust at right angles to line of keel
20rev, 23	*Suffered by the son of the Shunammite woman*
22, 36, 23	*Maudlin 44 with 31rev of this in " The Compleat Angler "*
24, 11	*Caused by yellow cakes in Philadelphia*
29rev	*Possessed by the first Lord Shaftesbury with 39rev*
30	*Osler's curious omission in malarial fever*
35	12ac
38	See 19
41rev	A pest with 8rev
44	*See 22*
45	Suitable after unchecked in 50 and 34
47, 46	Weller senior's legal adviser
49 rev	*See 8*

"Psychiatry in General Practice" would have been a better title for the précis of Professor Staehelin's postgraduate lecture in our last issue (p 233) He was speaking from his experience as director of a medical clinic in German-speaking Switzerland

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

CERTIFICATION OF DEATH IN INFANCY

F. J. W. MILLER, M.B. DURH., M.R.C.P., D.C.H.
SENIOR CHILD WELFARE OFFICER AND ASSISTANT PHYSICIAN TO THE BABIES' HOSPITAL, NEWCASTLE ON TYNE

DURING 1939 an investigation into the causes of infant deaths was carried out in Newcastle-on-Tyne (Spence and Miller[1]). The essential feature was a personal inquiry by one of two investigators, possessing a knowledge and experience of modern clinical pædiatrics, into the fatal illness and the circumstances of the death of every infant under the age of twelve months. The primary object was to seek accurate information on which to base a plan for the reduction of infantile mortality in Newcastle, but in addition we became interested in the accuracy of certification of death in infancy and the problems concerned therewith. These problems were not described or discussed in the published report.

PURPOSES AND USES OF DEATH CERTIFICATION

Certification of death is a legal duty imposed on the medical practitioner in regular attendance on a patient. He must, in all cases where he has been in such attendance, give a death certificate unless he has reason to suspect that death is due to causes other than natural, or unless the death is sudden from unknown causes or has been directly or indirectly caused by accident. The certificate must give the cause of death to the best knowledge and belief of the doctor and must be completed on the recognised form. After completion it must be delivered to the registrar who registers the death and gives a burial certificate.

The information contained on the certificate is used in preparing the mortality statistics published by the Registrar-General, and their accuracy depends on the care and correctness with which the information is given and the method of classification in use in the Registrar's office. Full information concerning both these points is given in the Manual of the International List of Causes of Death as adapted for use in England, Wales, Scotland and Northern Ireland (H.M. Stationery Office, 3*s.* 6*d.*), which is "an official statement of the practice in force in the several parts of the United Kingdom with regard to the classification of causes of death" and contains "suggestions to medical practitioners respecting certificates of causes of death." The 1938 edition, based on the fifth decennial revision by the International Commission (Paris 1938), came into operation in England in January, 1940. The introduction of this revision coincided with an important change in the method of classification of causes of death. When only one cause of death is given on a certificate it is accepted as the cause of death, but when two or more causes are given there may be difficulties in selecting one for classification. Before 1940 selection was made according to arbitrary rules; certain causes were preferred before others—e.g., prematurity was preferred to almost any other cause of death in infancy. This method had obvious disadvantages and in 1940 a change was made after a "study of a random sample of 10,000 death certificates showed that instances of obvious misunderstanding of the proper use of the form had become comparatively rare and that there was no longer any need to delay the adoption of a method of selection based on the certifier's opinion as to priority of causes" (Manual, p. 7). Since then, except in certain conditions, the morbid condition which started the train of events resulting in death has been considered the actual cause of death. Thus in most cases the practitioner's statement in Space I of the certificate is accepted as the cause of death. When more than one cause is given in Space I, that which was the starting-point of the condition is preferred as the cause of death—e.g., broncho-pneumonia due to whooping-cough is classified as whooping-cough. Causes given in Space I are always preferred to those in Space II unless they are grouped as ill-defined causes of death—e.g., asthenia, marasmus and inanition.[2] If an ill-defined cause is given in Space I and another cause in Space II the death is classified as the latter—e.g., if the immediate cause of death is given as "marasmus" and in Space II prematurity is given as a cause additional to but not in the direct chain of circumstances leading to death, the death will be classified to prematurity.

In certain conditions the Registrar-General may refer the certificate back to the certifier for additional information. For instance, the deaths of all children of more than three months certified as dying from prematurity are subjected to inquiry, so are deaths certified as pemphigus neonatorum, difficult birth, asphyxia or jaundice of the newborn. Yet, strangely enough, no inquiry is made in deaths due to sepsis neonatorum, precipitate labour, atelectasis neonatorum or icterus neonatorum.

Additional information may be forwarded to the registrar if the certifying practitioner initials the appropriate space on the back of the certificate. In this manner the information is collected and classified for use. After the cause of death has been determined classification is made according to the detailed international list of causes of death given in full in the manual.

CHIEF ERRORS OF CERTIFICATION

During our investigation it was possible to compare the causes of death as given on the death certificates with the opinion we expressed as to the most probable cause of death after a close consideration of all the available evidence. The clinical classification given in our report was not comparable with the grouping arrived at by tabulating the causes of death given by certification and no direct comparison will be attempted. But after a consideration of each death certificate in the light of all the available information and making allowances for mere difference in terminology we estimated that at least a third of the certificates gave an inaccurate or inadequate description of the causes of death. Sometimes the inaccuracy appeared to be due to carelessness in certification but most often it appeared to arise because the practitioner did not know the cause of death yet was compelled to give a death certificate unless he was prepared to inform the coroner. That this difficulty exists is shown by the fact that after a consideration of all the available information there was still a large group of deaths—41 (15%) out of 272—in which we were unable to express an opinion as to the cause of death. In most of these cases certificates had been given. As might have been expected the majority of these deaths (33) occurred at home but some (8) occurred in hospitals under conditions which should have given ample opportunities for elucidation of the causes of death; 13 of these children died under circumstances which required a report to the coroner. In only 2 of the 41 cases had a post-mortem examination been obtained. Two examples will indicate the type of case included.

CASE 38.—Female, 10th child, aged 10½ weeks. Healthy born. Weight at 3 weeks, 8 lb. 10 oz. Progress satisfactory; at 9 weeks weighed 10 lb. 7 oz. The child was found dead in her pram and the mother stated that she had been perfectly well when fed some minutes before. Reported to the coroner; the doctor's deposition stated that death was due to infantile convulsions. No autopsy.

CASE 105.—Male, 2nd child, aged 3 days. Healthy born. Birth weight 8½ lb. Born before the arrival of a doctor but good colour and appeared healthy. For 2 days thrived and sucked well but on the third day when midwife went to bathe him he was found grey and cold; he died shortly afterwards. Certified as congenital heart disease.

We found that we classified fewer infants as dying from prematurity alone—i.e., uncomplicated by infection, intracranial injury or other factors—than were certified as having died from prematurity. As a contrast, however, we considered that many more children died from the effects of birth (grouped by us as birth-deaths)—i.e., children suffering from trauma or infections during birth so that they died afterwards. We found that 38 (14%) of the 272 deaths occurred as a direct result of birth, while according to death certificates only 14 (5%) were grouped as birth-injuries. We also differed from the

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[1] Spence, J. C., and Miller, F. J. W. Report of an Investigation into the Causes of Infantile Mortality in Newcastle upon Tyne during 1939. Health Department, Newcastle upon Tyne, 1942.

[2] These conditions relating to death in infancy are given on p. 66 of the Manual of the International List of Causes of Death, 1938 edition.

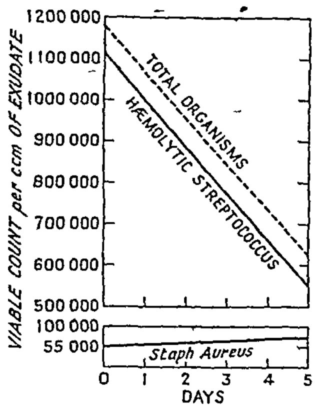

Fig 2—Effect of the application of sulphanilamide on the daily count of viable organisms in an infected abdominal wound

after repeated exposure to it Colebrook (1940) has shown that the more virulent the organisms the more effective are the drugs, but some of the virulent streptococci may possibly persist in a form more resistant but less pathogenic or non-pathogenic The survivors *may be but shadows of* their former selves This is supported by the fact that skin-grafting can be satisfactorily undertaken in spite of the continued survival of some organisms after chemotherapy Tolerance has been investigated by Stamp (1939) who reports the isolation of a factor from the streptococci themselves which is inhibitory to the action of sulphanilamide, and has *shown that the addition of dead organisms to cultures* containing sulphanilamide favours the survival of the organisms under culture and antagonises the sulphanilamide This graph gives no indication of clinical improvement since it fails to record that by the end of three weeks the wound was practically healed, being about a tenth of its original size and healthy *in appearance* in spite of the persistence of some organisms

Fig 2 comes from the case of a girl of 23 who developed sepsis in the abdominal wall after the removal of a gangrenous appendix and shows a similar dramatic fall in the viable count of the predominant organism, the hæmolytic streptococcus, while the small number of staphylococci rose slightly and gradually throughout In the light of further knowledge I feel sure that if the examination had been continued for more than six days the gradual slow rise in the streptococcal count would have appeared Once again clinical improvement was rapid and recovery soon ensued

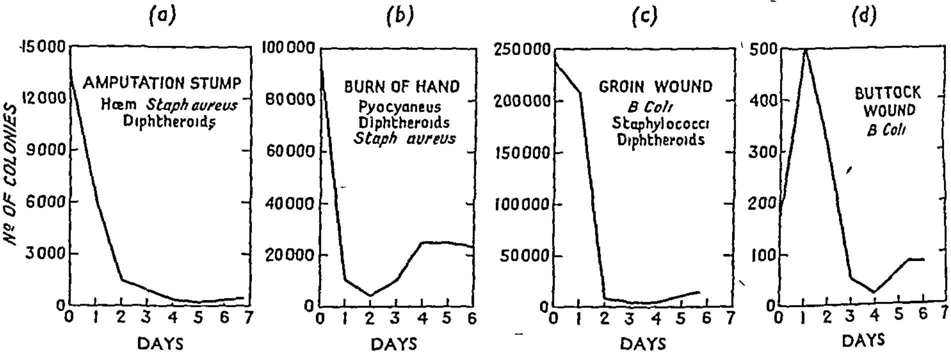

Fig 3—Daily count of viable organisms in chronic wounds after the local application of sulphathiazole powder

Chronic wounds with indolent sloughs and an unreactive appearance are usually infected primarily with the hæmolytic staphylococcus and the *Bacillus pyocyaneus*, and occasionally with the *B coli*, and are accompanied by non-pathogens, the most frequent of which are the diphtheroids, the *Micrococcus catarrhalis* and the non-hæmolytic staphylococci The streptococcus is rarely found on such wounds The bacteriological improvement in these cases was greater than had been expected and I am inclined to regard sulphathiazole as more effective than sulphanilamide in such circumstances, although the series is too small to allow of a dogmatic statement One conclusion however which I have been able to draw is that sulphathiazole is a valuable drug when locally applied to obstinate tuberculous sinuses By this means alone I have seen such a sinus heal in the neck and in the groin where it has resulted from operations, and in the scrotum in a case of tuberculous epididymo-orchitis and on the sternum from an abscess in bone which had been unsuccessfully operated on It is more likely that these results are from destruction of the secondary contaminants of the wound than that they represent bacteriostasis of the tubercle bacilli themselves, but at all events the wounds healed and tuberculosis became clinically completely quiescent

Fig 3*a* comes from an amputation stump in an airman whose finger had to be removed although the hand had also been burnt The operation necessitated the use of a flap which consisted only of scar tissue which sloughed The wound was very slow in healing until sulphathiazole was applied, after which healing was greatly accelerated and the granulations became firm and red The characteristic kick in the graph already discussed is shown and the great fall is gratifying seeing that the predominant organism was the *Staph aureus* and that the wound was extremely chronic

Fig 3*b* is from an extensive burn of the hand to which sulphathiazole was applied It shows the reduction which can be brought about even when one is dealing with the *B pyocyaneus* Research has not offered much *prospect of success when this organism* has been exposed to any of the sulphonamides in vitro, but it is most definitely affected when it is growing on an open wound. Once again the characteristic kick is shown, rising in this instance rather higher than in the majority but nowhere near as high as the original level I was not able to obtain the figures for each organism separately but all three shared in the production of this rise The patient was successfully thiersch-grafted on the seventh day, a layer of the powder being left beneath the graft

The wound from which the counts illustrated in fig 3c were obtained was particularly chronic and sloughs were present in it The bacteriological results were better than was indicated by the appearance of the wound which looked unreactive throughout, but the sloughs came away at the end of the week and the wound was sutured and healed by first intention Maybe the treatment was fortuitous in coinciding with the separation of the sloughs, maybe it assisted it, but it brings out several interesting points First, it did not retard their separation which is a criticism which has been levelled at local chemotherapy, secondly, the action of the drug was unimpaired by the presence of necrotic tissue in spite of the inevitable presence in it of split protein products, and thirdly, it is unlikely that first *intention* healing could have been obtained in similar circumstances without the help of the sulphonamides

Fig 3*d* comes from a wound produced by laying open widely a fistula-in-ano The bacteriological study was begun a week after operation It is a difficult area in which to apply dressings but trouble was taken to exclude the possibility of secondary fæcal contamination The considerable initial rise at the end of the first day's treatment was probably due to the presence of minute quantities of eusol with which the wound had previously been dressed, since this substance, as Francis has pointed out (1941), inhibits the action of the sulphonamides If this is the explanation it is a good demonstration of the harm which can be done by allowing chemicals to come in contact with wounds when sulphonamide therapy is in use Subsequently the graph showed a fall almost to zero on the fourth day followed by a slight but

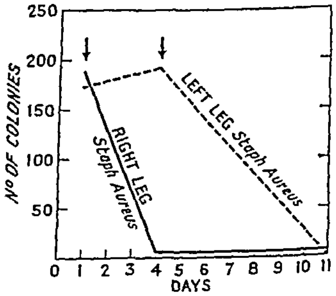

Fig 4—Effect of the application of sulphanilamide powder on the colony count of viable organisms recoverable from symetrical wounds of both legs The arrows denote the first application of the drug to each leg

maintained rise In this case the culture was of pure *B coli*

These results are typical of all the cases I have studied and establish proof that the number of living organisms per unit area of the wound can always be profoundly lowered by the local application of the drugs Sulphanilamide and sulphathiazole were the two drugs used , the choice depended on the type of wound and the nature of the organisms, sulphathiazole being chosen for the more chronic cases and for infections predominantly staphylococcal, sulphanilamide for acute and streptococcal lesions and a mixture of the two in equal parts where this seemed to be indicated A similar fall has not to my knowledge been recorded when the drug has been administered by mouth, and it seems unlikely that the results were merely consequent on the absorption from the raw area into the blood-stream with the production of a systemic action This belief was strengthened by a case of symmetrical scalds of both legs and feet Application of sulphanilamide to one leg left the colony count of the opposite one quite unaltered although a profound fall was seen in the treated limb, while treatment of the opposite side three days later produced in it an equally dramatic fall (fig 4)

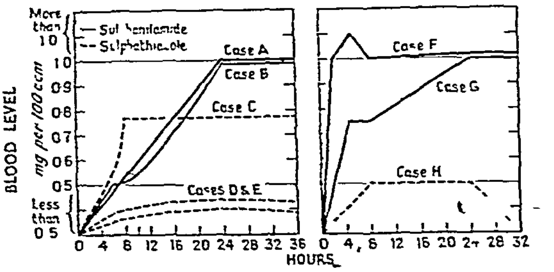

Fig 5—Blood levels Cases A E chronic wounds (4 sq cm approx) Cases F H burns (7 sq cm approx) All exposed to 1 5 g of drug for 36 hours

LEVELS OF SULPHONAMIDE IN BLOOD

In order to obtain further proof that the action was local another series of experiments was undertaken to determine the blood levels following local chemotherapy A measured quantity of the drug was applied to a wound of known extent and left for 36 hours during which time blood was collected at intervals 36 hours was chosen because it was found that the blood level had reached its peak after a single application by this time and because it is not practicable to leave such a wound for longer than this without re-powdering and applying fresh dressing

In all 8 cases were examined by this method 4 using sulphanilamide and 4 using sulphathiazole Fig 5, cases A–E, shows the results in 5 chronic wounds the drugs being estimated by Marshall's colorimetric method Extremely low values are recorded, the highest reaching 1 0 mg per 100 c cm while two of the sulphathiazole administrations produced only traces too small to be recorded by the colorimeter Sulphathiazole produced lower figures than sulphanilamide and appeared to reach its peak rather more quickly All these wounds were approximately 4 sq cm in area The remaining 3 cases, F–H in fig 5 were burns, and the raw surfaces were larger—approximately 7 sq cm in area The peak figures in the burns are much the same 1 0 mg per 100 c cm being only once exceeded and that only in a single sample It is noteworthy that the rate of absorption has been greater, the peak being reached in from two to eight hours instead of twenty-four hours and that once again sulphanilamide gave the higher readings These figures are in agreement with those of Hawking and Piercy (1941) who showed that the peak in 24 cases was reached about twenty-four hours after application and fell rapidly afterwards The low figures are in striking contrast with the level of 3 5 mg per 100 c cm reached in only 2½ hours after the oral administration of the same dose of 1 5 g as recorded by Fuller and James (1940)

It seems probable that to some extent the blood level after local application is proportionate to the extent of the area sprayed and to the amount of the drug used, and high figures with occasional cyanosis have been recorded when large doses have been applied to very extensive areas (Hooker and Lam 1941), one case having severe toxic manifestations and requiring the immediate removal of the powder after receiving the enormous dose of 120 g in two days But it is also probable that absorption is greatly influenced by the type of wound into which the powder is placed Jensen and his colleagues (1939) recorded comparatively high figures after the application of only a small amount of the drug to torn muscles and fractured bones followed by primary suture, but the level dropped quickly after the first twenty-four hours It seems therefore that care should be exercised in the administration of large doses to surfaces whose vascularity will allow of rapid absorption, but it is equally clear from the present experiments that successful bacteriological results are obtained when only a trace or at most 1 mg per 100 c cm has been absorbed into the blood-stream from the 1 5 g locally applied It seems almost certain therefore that the result is due to local action alone and is not dependent on absorption into the blood-stream

LEVELS OF SULPHONAMIDE IN URINE

In these cases the amount of sulphonamide in the urine was estimated over the same period in order to find out what part was played by the kidney It is seen (fig 6) that cases A and B in which sulphanilamide was used showed an excretion representing 12% and 10 7%, while the sulphathiazole yielded 7 4 % 7% and 3 5% These amounts do not of course represent the total excretion since the drugs were obviously excreted for some hours after the dressings had been removed and it is perhaps a pity that samples were not collected until the urine was free, but all show that the peak excretion had been reached at twenty-four hours and passed by thirty-six hours and that the total amounts are considerable The urinary concentrations of course vary with the total amount of urine secreted and are only of interest to show that with the passage of small quantities of a highly concentrated urine they can rise to considerable heights even though the blood concentration is still low Case A shows a concentration of 20 mg per 100 c cm in the urine with a blood level of only 1 mg per 100 c cm in a sample taken at the same time The larger wounds, as would be expected show higher figures the total excretion in 30 hours from the time of application of the drugs being 29 3% in F, 24 6% in G and in H, using sulphathiazole, 19 2% of the 1 5 g applied The urinary concentrations rise as high as 24 mg per 100 c cm and are rarely below 12 mg per 100 c cm

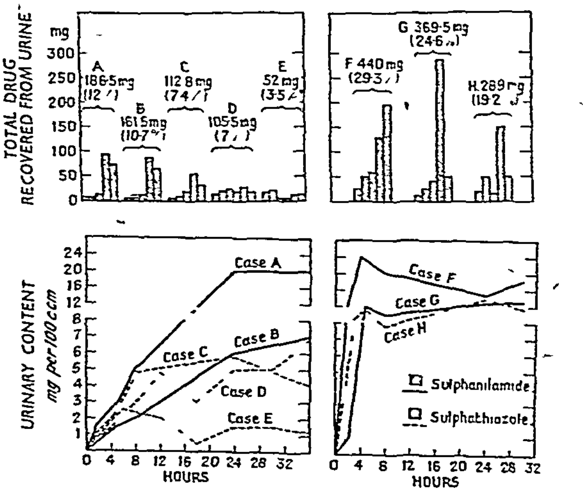

Fig 6—Cases A E and F H as in fig 5 The upper graphs show the amount of the drugs excreted in the urine between the application of the sulphonamide dressing and its removal and the percentage of the 1 5 g applied which these figures represent In cases A C specimens were taken at 2 5 8 24 and 36 hours in cases D and E at 6 12 18 24 30 and 36 hours and in cases F H at 2 5 8 24 and 30 hours The lower graphs show the concentration of the drugs in the urine over the same period

From these observations it is seen that within the first thirty-six hours, in spite of a very low concentration of the drug in the blood-stream, the kidneys are called on to excrete up to 29% of the dose applied and have temporarily to bear high concentrations of the drugs in the urine It therefore seems that care should be taken to exclude renal damage, as evidenced by the appearance of casts, red cells and albumin, in those cases which undergo prolonged local chemotherapy, particularly is this so in treating a large and vascular surface since the amount excreted appears to bear no relationship to the blood level, which is always low I was surprised to find that so much of the drugs had passed through the kidneys and am aware that I have not studied the urine in as much detail as seems to be necessary from these results Generalised toxæmia following local chemotherapy I have never seen

PROPHYLACTIC VALUE

Evidence has been put forward to prove the value of local chemotherapy in the treatment of wounds which are already infected, and in which organisms have invaded the tissues with the production of a greater or lesser amount of slough, and the fact that this action is produced locally has been established Proof of its value in prophylaxis, however, is still wanting and the difficulties here are great There is a very large group of cases in which one is clinically certain that organisms have been introduced but where chemotherapy formed part of the surgical toilet at the original debridement This group includes air-raid injuries, battle casualties, compound fractures and burns, and in order to establish proof of the prophylactic action of the sulphonamides it would be necessary to run a parallel series of similar cases from whom the drugs had been withheld My conviction of their life-saving qualities is so great that I do not feel it is justifiable to withhold them from any such case and I must be content therefore with clinical impressions and observations

There are, however, a few published papers which are useful Jensen and his colleagues (1939) compare the incidence of sepsis in all compound fractures admitted to their hospital during a year before the introduction of the sulphonamides with that occurring afterwards over a similar period The incidence was lowered from 27% to 4 8%, local chemotherapy being the only alteration in treatment King (1941), writing of experiences in the BEF, tells of a ready-made controlled experiment which was forced on him through shortage of the drugs Only the most severely wounded could be given local chemotherapy, yet he had no deaths from this group so long as they were under his care in the casualty clearing station, whereas several of the less severely injured to whom he had been unable to give the drugs died Handley (quoted by Jeffrey 1940) was able to study bacteriologically 25 cases of injury and compound fracture occurring in the Army before the German advance began, and found that 23 of the 25 remained sterile after the local application of sulphanilamide Johnson and Davis (1940) report from America what they describe as " excellent results and primary union " in 273 cases of infected wounds with local chemotherapy

At the London civilian hospital to which I was attached 25 Dunkirk casualties were admitted and about 650 air-raid casualties Of the Dunkirk cases all with open wounds had previously received sulphanilamide, the majority in the form of a locally applied pack, and a few by mouth Most of the wounds were five days old and the lack of sepsis was remarkable, healing was already taking place and surrounding cutaneous infection was minimal or absent These findings are similar to those of the surgeons working in other hospitals to whom I have spoken

Almost all air-raid casualties had multiple wounds, glass cuts being plentiful in the earlier days, and the routine treatment of all clean cut wounds, however caused, was to remove the foreign body, apply the drug and suture the skin This was followed by primary union in the vast majority of cases But administration of sulphanilamide by mouth must follow within 48 hours and be continued for at least four days, since otherwise there is a danger that organisms will recover their virulence after the absorption of the drug before being attacked and destroyed by the leucocytes Experimental evidence on this point has been brought forward by Legroux (1940), who showed that if organisms and sulphanilamide are applied together to a wound which is then sutured sepsis will appear in some of the animals, though it is delayed, while if the wound is reopened and re-sprayed sepsis is prevented It seems reasonable to add sulphathiazole to the sulphanilamide powder in such circumstances owing to its lower solubility and slower absorption The administration of 3 g of sulphanilamide by mouth daily in divided doses for four days was the routine we followed, this appeared to be quite sufficient to supplement the local application and could be discontinued without risk after this time if no sepsis was evident

Those wounds in which there was gross skin loss and maceration of muscle and in which compound fracture was present were subjected to thorough debridement followed by irrigation with hydrogen peroxide through a Higginson's syringe, after which plaster was applied to the limb and the cast cut from end to end and windowed over the wound Powder was then insufflated and the wound covered with dry sterile gauze The irrigation with peroxide and the local application of sulphanilamide were repeated daily through the window and it was striking how quickly the wounds improved Hydrogen peroxide converts sulphanilamide into its oxidation products, which appear to be the active anticatalytic agents, so that this therapy seems logical on chemical grounds and certainly is successful in practice It has already been advocated and tried by Schneider (1941) in America

On ten occasions *B welchii* were isolated from the wounds of air-raid casualties, occurring most commonly in the lower limb but including one case of infection of the brain In one case only—the first—was an amputation performed, and none died I am aware that the presence of anaerobes does not necessarily mean clinical gas gangrene but in these cases local crepitation was present or the muscles were friable, non-vascular and of the characteristic colour It is therefore of some importance to note that all were treated with extensive debridement, daily peroxide soaks followed by sulphanilamide application through their windowed plaster and were in addition injected intramuscularly with anti-welchii serum The rapid improvement in their local and general condition was gratifying Spreading gas gangrene never occurred

Rest of the infected tissues by the application of plaster-of-paris is very important and should be carried out whenever possible, while the end-to-end cut will greatly add to the patient's comfort besides being the only way to guarantee that gangrene cannot occur while supervision is intermittent during transfer to a base hospital Windowing should always be large

Many surgeons have pointed out that it is difficult to obtain an even distribution of powder in wounds and that failures are sometimes due to a part of the wound escaping the direct contact of the drug The ability to penetrate and to spread appears to be very limited and Hawking (1941) has shown experimentally that at a distance of 2 cm no more of the drug is present than is found in the muscles of the opposite limb To overcome this difficulty Schneider (1941) has suggested that a supersaturated solution should be prepared by warming so that on being run into the wound it would be deposited in every nook and cranny as the fluid cooled Sulphanilamide is soluble only to about 0 8% at room temperature but I have determined that at 105° F, which would be safe for local exhibition, this figure is raised to 3 0% in normal saline Schneider actually tried this using heated peroxide but this substance is so unstable that its value is considerably impaired by heating, added to which there seems to be an increased risk of toxæmia following its use To add the warm saline solution after peroxide irrigation would seem more logical

One other word of caution Procaine and its allies contain esters of para-aminobenzoic acid and therefore exert an antagonistic influence on the drugs, so it is necessary to be particularly careful that these are injected round the wound and not into it if their use is essential Cocaine is not antagonistic as it does not belong to this group of drugs Eusol, as Francis (1941) has pointed out, renders the drugs inert so it must be avoided, and it is wise to use dry gauze, or gauze soaked in saline in the case of a dry wound, rather than apply any antiseptics with the drugs

HARMFUL EFFECTS

Research in this country and America has so far brought forward no convincing evidence that the sulphonamides are capable of injuring the leucocytes or the tissues to which they are applied despite one early report by Bricker and Graham (1939) that the tensile strength of fibrous tissue was diminished, this has not been confirmed Russell and Falconer (1940) have studied the rabbit s brain after the application of sulphanilamide and found no irritative or inflammatory changes at the site of application. Glynn (1941) has demonstrated that the organisation of an artifically produced intramuscular hæmatoma takes no longer in its presence, while Key and Burford (1940) have checked radiologically the rate of union of fractures in the rabbit s foreleg in the presence of the drug and found it to be identical with that of controls Bickford (1941) reports that there is no evidence of an inflammatory reaction in the synovial fluid after its exhibition in a joint Colebrook and Francis (1941) found that sulphanilamide certainly had no adverse effect on the healing of superficial wounds infected with hæmolytic streptococci, and it has been my experience that the chances of the "take ' of a tissue so delicate as a Thiersch graft are in no way impaired by the presence of the drug sprayed over the raw area. and in the presence of sepsis are considerably enhanced

SUMMARY

Experimental work in human wounds has demonstrated that the local application of sulphonamides greatly lowers the number of living organisms in an infected wound and that this action is produced locally.

These results are obtained when only a trace, or at most 1 mg per 100 c cm., of the drug is present in the blood-stream, but over the same period the kidney may be called on to excrete a fair percentage of the total quantity exhibited, so that when only a small quantity of urine is passed a high concentration of the drug may be found in it This suggests the advisability of frequent examination of the urine for signs of renal damage particularly when surfaces of more than average vascularity are under prolonged treatment

The great benefits of this form of therapy have been illustrated by reference to macroscopic improvement, to the separation of sloughs and to the results of early grafting and primary suture while its value in the treatment of tuberculous sinuses has been emphasised

In prophylaxis the sulphonamides are of great value, but after primary suture small doses must be given by mouth for four days For wounds in which primary suture is impossible plaster-of-paris is a valuable adjunct but only in so far as it puts the injured part at rest The plaster should be windowed allowing the regular daily application of the sulphonamides after peroxide irrigation. The use of a supersaturated solution obtained by dissolving in saline at 105° F is suggested in order to obtain an even distribution of the drugs in the recesses of the wound. I find no virtue in the practice of encasing an unhealed infected wound in a closed plaster

Chemicals such as eusol should not be used when local chemotherapy is in progress since the majority of such drugs antagonise the sulphonamides as do also the procaine group of local anæsthetics

I wish to thank the Director General of the RAF Medical Services for permission to deliver this lecture, the commanding officer and staff of the RAF hospital to which I am attached, and the staff of the RAF Institute of Pathology, especially Flight-Lieutenant D E Price; and the staff of the Westminster Hospital, especially Dr J G Humble, to whom I am indebted for the bacteriological technique

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MAXIMAL RESPONSE TO LIVER THERAPY IN PERNICIOUS ANÆMIA

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ASSISTANT PATHOLOGIST ROYAL HOSPITAL WOLVERHAMPTON

Note on dosage by S C DYKE DM OXFD FRCP
DIRECTOR, PATHOLOGICAL DEPARTMENT

WIDE differences exist in the amount of liver extract used in the treatment of pernicious anæmia This arises partly from the employment of extracts of low potency, partly from custom Before steps can be taken to remedy this it is necessary to establish criteria of potency With this in view the data given below were collected from the records of the pathological department of the Royal Hospital It is now established that oral therapy is wasteful and consideration has therefore been confined to preparations for parenteral use The intravenous route was never used

Minot and his colleagues (1928) were the first to introduce a formula from which the potency of liver extracts could be determined; this was derived from the reticulocyte response Their formula was

$$\mathrm{EpR} = \frac{\mathrm{EoR}}{1 - \mathrm{R}} = 0{\cdot}73 - 0{\cdot}2\,\mathrm{Eo}$$

in which Eo is the initial red-cell count Ep the red-cell count at the peak of the reticulocyte rise and R the peak reticulocyte percentage This was subsequently modified by Riddle (1930) to ·

$$\mathrm{R} = \frac{0{\cdot}73 - 0{\cdot}2\,\mathrm{Eo}}{0{\cdot}73 - 0{\cdot}8\,\mathrm{Eo}}$$

Later it was observed that the rise in red cells and hæmoglobin does not in every case follow the rise in reticulocytes and vice versa. The aim of liver therapy is the restoration of a normal red-cell count, the attainment of this and the time in which it is reached must therefore be the values for the assessment of potency of the therapeutic agent This was pointed out by Murphy (1933):

> ' With the introduction of highly concentrated and potent liver extracts for parenteral administration   the magnitude of the reticulocyte response is not directly proportional to the amount of potent material used, nor is the accompanying increase in the erythrocytes necessarily directly proportional *to the rise in reticulocytes* Consequently, and because the primary object of treatment is to elevate the level of and improve the character of the erythrocytes, it would seem advisable to rely more on increases in the erythrocytes, as a means of determining the actual comparative effectiveness of the various substances used '

Recently Riddle (1940), analysing the results obtained in about 600 cases of pernicious anæmia, proposed the formula $\mathrm{I} = 0{\cdot}78 - 0{\cdot}174\,\mathrm{Eo}$ in which I is the average weekly increase in red cells during the first two weeks of treatment, and Eo is the red-cell count before treatment According to Riddle the blood of a satisfactorily treated patient should show a red-cell count of 4 500 000 or more in from 6 to 8 weeks and during the first 2 weeks of treatment an average weekly erythrocyte increase according to the formula Conversely a liver extract of unknown potency tested on a case of pernicious anæmia should be considered fully potent only when the rise in erythrocytes during the first 2 weeks of treatment equals or exceeds that expressed by the formula

MATERIAL STUDIED

During the last 12 years approximately 200 patients suffering from pernicious anæmia have been treated at this hospital, in about 125 of these sufficient data relating to red-cell counts reticulocyte counts and liver extracts employed, were available to enable us to make on to excrete up to 29% of the dose applied and have temporarily to bear high concentrations of the drugs in the urine. It therefore seems that care should be taken to exclude renal damage, as evidenced by the appearance of casts, red cells and albumin, in those cases which undergo prolonged local chemotherapy; particularly is this so in treating a large and vascular surface since the amount excreted appears to bear no relationship to the blood level, which is always low. I was surprised to find that so much of the drugs had passed through the kidneys and am aware that I have not studied the urine in as much detail as seems to be necessary from these results. Generalised toxæmia following local chemotherapy I have never seen.

PROPHYLACTIC VALUE

Evidence has been put forward to prove the value of local chemotherapy in the treatment of wounds which are already infected, and in which organisms have invaded the tissues with the production of a greater or lesser amount of slough, and the fact that this action is produced locally has been established. Proof of its value in prophylaxis, however, is still wanting and the difficulties here are great. There is a very large group of cases in which one is clinically certain that organisms have been introduced but where chemotherapy formed part of the surgical toilet at the original debridement. This group includes air-raid injuries, battle casualties, compound fractures and burns, and in order to establish proof of the prophylactic action of the sulphonamides it would be necessary to run a parallel series of similar cases from whom the drugs had been withheld. My conviction of their life-saving qualities is so great that I do not feel it is justifiable to withhold them from any such case and I must be content therefore with clinical impressions and observations.

There are, however, a few published papers which are useful. Jensen and his colleagues (1939) compare the incidence of sepsis in all compound fractures admitted to their hospital during a year before the introduction of the sulphonamides with that occurring afterwards over a similar period. The incidence was lowered from 27% to 4·8%, local chemotherapy being the only alteration in treatment. King (1941), writing of experiences in the BEF, tells of a ready-made controlled experiment which was forced on him through shortage of the drugs. Only the most severely wounded could be given local chemotherapy, yet he had no deaths from this group so long as they were under his care in the casualty clearing station, whereas several of the less severely injured to whom he had been unable to give the drugs died. Handley (quoted by Jeffrey 1940) was able to study bacteriologically 25 cases of injury and compound fracture occurring in the Army before the German advance began, and found that 23 of the 25 remained sterile after the local application of sulphanilamide. Johnson and Davis (1940) report from America what they describe as "excellent results and primary union" in 273 cases of infected wounds with local chemotherapy.

At the London civilian hospital to which I was attached 25 Dunkirk casualties were admitted and about 650 air-raid casualties. Of the Dunkirk cases all with open wounds had previously received sulphanilamide, the majority in the form of a locally applied pack, and a few by mouth. Most of the wounds were five days old and the lack of sepsis was remarkable; healing was already taking place and surrounding cutaneous infection was minimal or absent. These findings are similar to those of the surgeons working in other hospitals to whom I have spoken.

Almost all air-raid casualties had multiple wounds, glass cuts being plentiful in the earlier days, and the routine treatment of all clean cut wounds, however caused, was to remove the foreign body, apply the drug and suture the skin. This was followed by primary union in the vast majority of cases. But administration of sulphanilamide by mouth must follow within 48 hours and be continued for at least four days, since otherwise there is a danger that organisms will recover their virulence after the absorption of the drug before being attacked and destroyed by the leucocytes. Experimental evidence on this point has been brought forward by Legroux (1940), who showed that if organisms and sulphanilamide are applied together to a wound which is then sutured sepsis will appear in some of the animals, though it is delayed, while if the wound is reopened and re-sprayed sepsis is prevented. It seems reasonable to add sulphathiazole to the sulphanilamide powder in such circumstances owing to its lower solubility and slower absorption. The administration of 3 g. of sulphanilamide by mouth daily in divided doses for four days was the routine we followed; this appeared to be quite sufficient to supplement the local application and could be discontinued without risk after this time if no sepsis was evident.

Those wounds in which there was gross skin loss and maceration of muscle and in which compound fracture was present were subjected to thorough debridement followed by irrigation with hydrogen peroxide through a Higginson's syringe, after which plaster was applied to the limb and the cast cut from end to end and windowed over the wound. Powder was then insufflated and the wound covered with dry sterile gauze. The irrigation with peroxide and the local application of sulphanilamide were repeated daily through the window and it was striking how quickly the wounds improved. Hydrogen peroxide converts sulphanilamide into its oxidation products, which appear to be the active anticatalytic agents, so that this therapy seems logical on chemical grounds and certainly is successful in practice. It has already been advocated and tried by Schneider (1941) in America.

On ten occasions *B. welchii* were isolated from the wounds of air-raid casualties, occurring most commonly in the lower limb but including one case of infection of the brain. In one case only—the first—was an amputation performed, and none died. I am aware that the presence of anaerobes does not necessarily mean clinical gas gangrene but in these cases local crepitation was present or the muscles were friable, non-vascular and of the characteristic colour. It is therefore of some importance to note that all were treated with extensive debridement, daily peroxide soaks followed by sulphanilamide application through their windowed plaster and were in addition injected intramuscularly with anti-welchii serum. The rapid improvement in their local and general condition was gratifying. Spreading gas gangrene never occurred.

Rest of the infected tissues by the application of plaster-of-paris is very important and should be carried out whenever possible, while the end-to-end cut will greatly add to the patient's comfort besides being the only way to guarantee that gangrene cannot occur while supervision is intermittent during transfer to a base hospital. Windowing should always be large.

Many surgeons have pointed out that it is difficult to obtain an even distribution of powder in wounds and that failures are sometimes due to a part of the wound escaping the direct contact of the drug. The ability to penetrate and to spread appears to be very limited and Hawking (1941) has shown experimentally that at a distance of 2 cm. no more of the drug is present than is found in the muscles of the opposite limb. To overcome this difficulty Schneider (1941) has suggested that a supersaturated solution should be prepared by warming so that on being run into the wound it would be deposited in every nook and cranny as the fluid cooled. Sulphanilamide is soluble only to about 0·8% at room temperature but I have determined that at 105° F., which would be safe for local exhibition, this figure is raised to 3·0% in normal saline. Schneider actually tried this using heated peroxide but this substance is so unstable that its value is considerably impaired by heating, added to which there seems to be an increased risk of toxæmia following its use. To add the warm saline solution after peroxide irrigation would seem more logical.

One other word of caution. Procaine and its allies contain esters of para-aminobenzoic acid and therefore exert an antagonistic influence on the drugs, so it is necessary to be particularly careful that these are injected round the wound and not into it if their use is essential. Cocaine is not antagonistic as it does not belong to this group of drugs. Eusol, as Francis (1941) has pointed out, renders the drugs inert so it must be avoided, and it is wise to use dry gauze, or gauze soaked in saline in the case of a dry wound, rather than apply any antiseptics with the drugs.

The average group includes all those cases which responded well to liver treatment, and in which the blood-count was restored to normal in 6–8 weeks The formula $I = 0\ 93 - 0\ 214\ Eo$ corresponds to that found by Riddle for his cases satisfactorily treated with intravenous injections, and is also very near those which can be calculated from the figures given by Isaacs and his colleagues and by Schiødt This formula should be considered as representing a minimal increase of red cells under satisfactory treatment In any case of supposed pernicious anæmia which at the end of 2 weeks fails to show the increase of red cells demanded by the formula the reason must be sought, this will probably turn out to be insufficient dosage due to low potency of the liver preparation, if this or some concomitant deficiency of other hæmopoietic factors (such as thyroxin or vitamin C) is not the cause it will indicate that the patient is suffering from a form of anæmia not amenable to liver

The same formula can be used and is applied at this hospital for the assessment of potency of liver extracts, they are considered fully potent only when the injection of an adequate test dose produces in a patient suffering from pernicious anæmia a red-cell response equal to or higher than that indicated by the formula In about half the cases observed in the pathological department, the red-cell response to a fully potent liver extract has been much higher than that expected from Riddle's formula, and a normal blood-count of 4 500,000 or more has been reached in a shorter time than in most of the cases reported in the literature As stated above the formula obtained in these satisfactory cases is $I = 1\ 30 - 0\ 274\ Eo$

With the exception of those reported by Murphy, no published cases have been found giving a red-cell response as large as that observed in the present series Murphy pointed out the unreliability of the reticulocyte response as a means of assessing the potency of liver extracts, he demonstrated that the increase of red cells may be great when the reticulocyte response is low, and that (as with the reticulocyte response) the increase of red cells is inversely proportional to the initial erythrocyte count He did not as was later done partially by Schiødt, and more accurately and completely by Riddle work out a formula expressing this relationship For comparison with the present series of cases, an equation, given above, has been calculated from the figures given by Murphy, this equation ($I = 1\ 15 - 0\ 235\ Eo$) is in fact closely similar to that obtained from the satisfactory group All other figures and formulæ found in published works, as pointed out above, approximate to the values obtained from the average and in some cases to the unsatisfactory group It is curious that the results obtained in the treatment of pernicious anæmia in this hospital should be better than those previously reported This may be due to the employment only of liver extracts of known high potency

SUMMARY

A series of 125 cases of pernicious anæmia has been reviewed and the relationship between the red-cell count before, and its increase during the first 2 weeks of treatment with parenteral liver extracts has been expressed by mathematical equations

More than half the cases have been found to give a response to treatment better than was to be expected from previously published formulæ

The reticulocyte response does not give an accurate indication of the effectiveness of liver treatment and is therefore not reliable by itself as a means of assessing the potency of liver extracts

The formula $I = 0\ 93 - 0\ 214\ Eo$ (where I is the average weekly increase in red cells during the first 2 weeks of treatment, and Eo is the red-cell count before treatment) has been found to express a satisfactory response to treatment and is proposed as the standard equation for the assessment of the potency of liver extracts

I wish to thank Dr S C Dyke for permission to use the case-records, also Dr A Liebetegger, for assistance in the mathematical analysis

Dosage Dr Dyke

Dr Della Vida points out that only those liver extracts can be regarded as fully potent which, on the injection of an adequate test dose, produce a response satisfying his formula This statement at once raises the question of the size of the adequate dose It is evident that the actual bulk of such an adequate dose will depend upon the concentration of the antianæmic factor in the preparation used Given two preparations the first containing the factor in 5 times the strength of the second the adequate dose of the first will be only ⅕ the bulk of that of the second Unfortunately it is at present impossible to assess the antianæmic factor in "units" An attempt at this has been made by the anti-anæmia preparations advisory board of the United States Pharmacopeia (1938) which has laid down that wording on labels or in package literature must give the information as to the daily dosage necessary to produce a "satisfactory hæmopoietic response" in a case of pernicious anæmia, this daily dose "constitutes a unit" The criterion of a "satisfactory hæmopoietic response" appears to be based on the expected reticulocyte responses calculated from the formula of Minot and his colleagues (1928), and on red cell production A high reticulocyte response is usually the precursor of a satisfactory rise in the red cells, but this Dr Della Vida points out is not always the case It is therefore unsafe to use the reticulocyte response as a criterion of potency in assessing liver extracts The rise of the red cells can alone be regarded as a true indication of potency

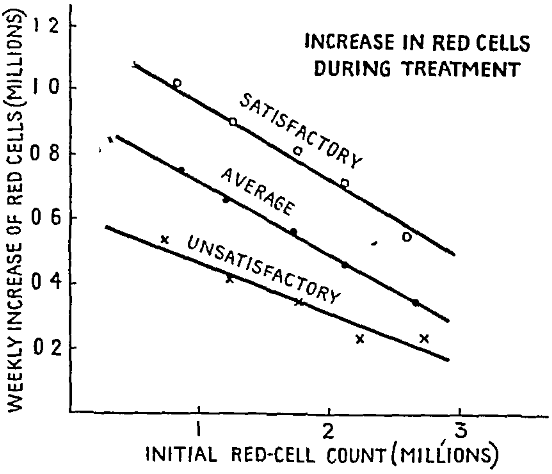
This is not to say that observation of the reticulocytes should be dispensed with, for 3 to 6 days at least from the beginning of treatment the reticulocytes should be counted daily, absence of a response during that period serves as a safe indication that the preparation used is ineffective and that the observation can be discontinued A high reticulocyte response, satisfying the formula of Minot and his colleagues, however, affords no certainty that the red cells will at the end of 2 weeks attain the figures called for by the formula of Riddle (1940), much less that of Della Vida, and in the face of such a response the observation of the red cells must be continued over the full period of 2 weeks

In the cases forming the subject of Dr Della Vida's calculations the actual dosage of liver extract has varied greatly In the early days of the treatment it was the custom to give daily doses, later it was found that with fully potent preparations such frequent dosage was unnecessary In this department a standard dosage of parenteral preparations has been established for the initiation of treatment, this consists of an initial dose of 4 c cm followed at equal intervals during the first week by two doses of 2 c cm and during the second week by a further dose of 2 c cm —a total of 10 c cm during the first 2 weeks This works out as a daily dose over 14 days of 0 715 c cm and each 1 c cm of liver extract would therefore contain at least 1 4 USP units In the absence however of any accurate knowledge as to the actual chemical nature of the antianæmic principle such pretence at accurate assessment appears misleading and likely to cloud the issue It is preferable to dispense with units and to speak of the actual amount of a liver preparation required to produce a red-cell response according to an agreed formula Experience suggests that for this purpose 10 c cm of a fully potent preparation given in the dosage mentioned above over the first 2 weeks of treatment is ample, and it follows that preparations failing to produce the expected red-cell response in this dosage must be regarded as not fully potent and their use as wasteful

We now consider that after the first 2 weeks of treatment a dose of 6 c cm monthly should rapidly bring the red-cell count to normal For maintenance we have found that most cases can be kept in remission on a dose of 4–6 c cm over a period of 2–3 months This may be given divided at monthly intervals or as one injection every 2 or 3 months This is below the dosage employed by many other workers (Wilkinson and Israels 1942) We have found it impossible to establish a depot, no matter how much extract be injected, to last for more than 3 months

I understand from the manufacturers of two of the preparations used in this department that 2 c cm of these represent 20–100 g of raw liver, the same amount of concentrated liver extract prepared by Lederle in USA is stated to be derived from 200 g of fresh liver (Kracke 1937) The use of unnecessarily large quantities of liver extract in the treatment of pernicious anæmia an analytical survey and to compare results with those obtained by other workers

From the data available the average weekly increase in red cells during the first weeks of treatment has been calculated and plotted graphically As Riddle (1940) and other workers point out, the increase of erythrocytes in a satisfactorily treated case of pernicious anæmia is not uniform, but is maximal during the first 2 or 3 weeks of treatment, thereafter becoming less and less the nearer the red-cell count approaches to normal The increase in the first 2 weeks of treatment was therefore selected for the calculation of the weekly increase



At the same time the maximal reticulocyte response of each case was plotted graphically, it was soon noted that, with few exceptions, the cases under review gave a smaller reticulocyte response than that expected from Riddle's (1930) formula Reticulocyte counts vary widely in the hands of different workers and these low responses may be due to differences in technique It was noticed however that a high reticulocyte response did not occur in every case in which the blood count was restored to normal in 4–8 weeks, and which therefore might be considered to be satisfactorily treated It was decided therefore to divide the cases into groups, not following Riddle's criterion of the magnitude of the reticulocyte response but taking into account only the increase in red cells during the first 2 or 3 weeks of treatment

For each patient the erythrocyte count before treatment and the average weekly increase were located on graph paper as one point On plotting all the points these were found to fall into three distinct groups which were empirically labelled "satisfactory," "average," and "unsatisfactory" Next the points in each group were subdivided according to the initial red-cell count at 500,000 intervals (e g, those falling between 500,000 and 1,000,000, between 1,000,000 and 1,500,000, and so on), and arithmetical averages were struck of the figures representing the points within each subdivision, these averages were plotted graphically (see figure) and for each of the three groups an equation was calculated expressing the relationship between initial red-cell count and weekly increment As observed by various workers, the average weekly increase was found to bear an inverse relationship to the initial red-cell count These equations are shown below, with the standard equations suggested by Riddle (1940), and those calculated from the figures of Isaacs and his colleagues (1938) and Murphy (1933)

Average $I = 0.93 - 0.214$ Eo
Satisfactory $I = 1.30 - 0.274$ Eo
Unsatisfactory $I = 0.63 - 0.158$ Eo
Riddle's satisfactory $I = 0.78 - 0.174$ Eo
„ unsatisfactory $I = 0.60 - 0.176$ Eo
Isaacs et al $I = 0.87 - 0.168$ Eo
Murphy $I = 1.15 - 0.235$ Eo

The same procedure was adopted in plotting the averaged reticulocyte responses, the results are shown below It is readily seen that the reticulocyte response of the average group is almost of the same magnitude as that of the satisfactory group, and that the unsatisfactory one gives responses only a few per cent lower than the other two groups Of the three groups of patients the average was found to be the most homogeneous, the standard deviation from the obtained formula being only ± 0.027 million The standard deviation in the unsatisfactory group was ± 0.062 million, and in the satisfactory ± 0.090 million In every group the red cells reached 4,500,000 or more, but the time required to attain a normal count varied from group to group The satisfactory group reached a normal level in 4–6 weeks, the average group in 6–8 and the unsatisfactory group in 8–12 weeks

Red cell count before treatment (millions)	Reticulocytes %		
	Satisfactory	Average	Unsatisfactory
0.90	18.8	17.6	16.7
1.26	18.6	19.3	16.1
1.73	16.4	14.5	9.2
2.33	6.6	1.8	7.4
2.66	7.8		6.2

To show the responses to different extracts and the relationship between initial red-cell count and weekly increment, averages of the points are given for 4 different extracts (see table), these are grouped to show the satisfactory, average and unsatisfactory responses and the range of variation of the weekly red-cell rise

The greatest number of cases falling in the unsatisfactory group were patients treated in the early days of liver treatment, or with test extracts found to be of low potency In a few, although the preparation was of known potency and the dosage adequate, the erythrocyte count did not increase according to the average group formula, the patients nevertheless reached a normal blood-count, but in a longer period of time No particular reason could be found to explain this behaviour The formula $I = 0.63 - 0.158$ Eo given above for these unsatisfactory cases is very similar to that obtained by Riddle for his unsatisfactory cases, and that which can be calculated from the figures given by Schiødt (1939) for cases treated with oral preparations

RED CELL RESPONSE TO FOUR DIFFERENT LIVER EXTRACTS

Extract	Patients treated	Av initial count *	Rise per week			Result
			Av	Max	Min	
		Millions				
A	6	0.86	1.083	1.455	0.880	Satisfactory
	17	1.25	0.940	1.370	0.763	
	7	1.84	0.822	1.010	0.652	
	7	2.17	0.744	0.878	0.577	
	3	2.60	0.544	0.602	0.476	
	3	0.84	0.724	0.810	0.668	Average
	3	1.29	0.634	0.675	0.578	
	3	1.71	0.561	0.582	0.550	
	2	2.20	0.435	0.485	0.385	
	2	2.66	0.364	0.385	0.342	
	1	0.58	0.502			Unsatisfactory
	2	1.22	0.488	0.582	0.394	
	2	1.90	0.301	0.397	0.204	
	1	2.15	0.237			
	2	2.73	0.232	0.270	0.194	
B	3	0.90	0.994	1.060	0.960	Satisfactory
	3	1.31	0.995	1.350	0.785	
	3	1.62	0.906	1.130	0.653	
	1	2.78	0.602			
	1	0.80	0.780			Average
	5	1.22	0.658	0.770	0.581	
	2	1.78	0.565	0.605	0.525	
	1	2.00	0.545			
	2	0.79	0.593	0.652	0.534	Unsatisfactory
	2	1.34	0.417	0.448	0.385	
	3	1.72	0.424	0.435	0.413	
C	2	0.87	0.939	0.962	0.915	Satisfactory
	3	1.20	0.995	1.285	0.840	
	2	1.72	0.803	0.995	0.650	
	2	0.93	0.775	0.780	0.770	Average
	7	1.17	0.683	0.758	0.615	
	1	1.65	0.545			
	1	0.78	0.460			Unsatisfactory
	3	1.15	0.373	0.550	0.175	
	2	1.64	0.344	0.377	0.311	
D	5	1.34	1.002	1.205	0.826	Satisfactory
	1	1.83	0.660			
	1	2.55	0.590			Average
	1	1.13	0.632			Unsatisfactory
	5	1.30	0.416	0.467	0.310	
	3	1.71	0.374	0.420	0.325	
	1	2.30	0.240			

* Patients were divided according to initial red cell count at 500,000 intervals

USE OF ETHYL CHLORIDE SPRAY IN SOFT-TISSUE INJURIES

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Within the last few years several observers, including Kraus,[1] Creer,[2] and Cozen and Hollombe,[3] have mentioned the beneficial effects of cutaneous anæsthesia and active movements in acute muscular spasms and sprained joints The results we have obtained with an ethyl-chloride spray in the treatment of lesions of this type have been striking

While rest is indicated in the treatment of bony injuries and infections, it is likely that many, if not all, uncomplicated soft-tissue injuries are far better treated by active movement Not only that, but in injuries of muscles and ligaments rest often leads to embarrassing sequelæ, such as the "frozen" shoulder that may result from rest treatment of trauma to the acromioclavicular ligaments Ethyl chloride sprayed over the tender area of spasm or sprain is a simple anæsthetic agent that will in most cases permit active movement without too much discomfort It is obviously simpler to apply than the injection method but it cannot replace injection treatment in deep-seated lesions such as are encountered in low back pain

TECHNIQUE

This method is not advisable in cases of fracture or torn ligaments or muscles of severe degree To determine if a fracture is present an X ray should be taken The most painful area is then ascertained from the patient and is sprayed with ethyl chloride till the skin is white A full range of passive movement is then carried out when the patient quickly appreciates that the pain on movement is less Occasionally it is found that one or more adjacent areas are painful on movement that were not originally recognised These areas are sprayed in the same way until a complete range of active movement in the affected area is possible without pain Too much anæsthetic must not be used, or frostbite may result Attention must be given to the excess ethyl chloride which may accumulate in a dependent area and produce superficial necrosis of the skin When a full range of movement is attained the area is treated with camphor liniment and massage until a good cutaneous circulation is restored

During the application of the spray a more intense burning and painful sensation is felt than would be felt over a normal surface area treated in the same way This burning sensation vanishes when the spray is stopped A mottled reddish discolorisation may remain for a time afterwards and be associated with mild itching Tenderness over the affected area may persist for some days but as a rule pain on movement is trivial

The patient is told to carry out a full range of movement several times each day though the part should not be subjected to excessive strain In mild cases only one application may be necessary but in more severe ones pain returns range of movement diminishes and a second or third application may be required Since active movement is the basic principle of this method, immobilisation by splint or strapping is definitely not to be employed It is advisable to ask the patient to return on the first and third day after the initial treatment to ensure that the full range of movement is still present and that no untoward complication has arisen

RESULTS

It is early yet to give a complete list of the conditions that might be treated in this manner, but experience so far has shown that acute traumatic lesions of the soft tissues, when not too extensive, give the best results Within this group would be placed sprains such as that of the ankle finger thumb, wrist, elbow, and acromioclavicular joint and minor injuries about the knee If there is delay before these conditions are treated the period of disability will be prolonged Chronic lesions may also be improved but the results are not so striking Late lesions of any of the above conditions, tenosynovitis, pain of indefinite origin and the like have shown remarkable improvement If there is no noticeable response care should be taken that some other underlying condition has not been overlooked

We have already treated 109 patients with the ethyl-chloride spray and active movements They may be subdivided as follows

Sprained ankle	33	Soft-tissue injuries about the elbow	5
Trauma to interphalangeal joints	25	Soft tissue injuries about the wrist	3
Traumatic tenosynovitis	12	Soft-tissue injuries about the knee	4
Direct muscle trauma	10	Contusion of bone	4
Sprain of the acromioclavicular joint	7	Pain of indefinite origin	6

Ankle-joint —By far the largest group have been sprains about the ankle-joint Of these the majority have been about the external malleolus Only 6 cases have had swelling about both the external and internal malleoli Pain on movement, as would be expected is on inversion and plantar flexion The site of tenderness is usually anterior and inferior to the external malleolus Less significance is paid to the localised tenderness than to the sites of localised pain in the treatment The ecchymosis is more noticeable on the day after treatment and tends to be dependent In a few cases the swelling has increased after treatment but as a rule within 24–48 hours the œdema is definitely less and may be entirely gone in 5–6 days The treatment of sprains of the ankle-joint has proved the most satisfactory of all the conditions enumerated

Interphalangeal joints —For the most part the fingers rather than the toes have been treated This group includes a few cases with injuries to the metacarpophalangeal joints as well The areas treated are the lateral, medial and dorsal surfaces of the joint The results have mostly been better than had been anticipated Injuries in these areas are so prone to develop chronic swelling and limitation of movement that some change in the usual methods of treatment seems justifiable It is our impression that there has resulted less fibrosis and periarticular swelling than follow the customary immobilisation

Tenosynovitis —This group includes traumas to the extensor and abductor pollicis longus, tendo achilles, tibialis posticus and the common extensors of the fingers and toes Localised pain and tenderness when contraction of the particular muscle is made against resistance has been the chief sign in the diagnosis, together with a certain amount of swelling in some instances In general these cases have done well

Trauma to muscle —These include contusions of the muscles of the back, thigh and calf with swelling, pain, limitation of function and occasionally ecchymosis The treatment has been beneficial

Sprain of acromioclavicular joint —The acute cases without displacement of the clavicle have done well Those that have a chronic condition the result of a traumatic arthritis, have been improved

Elbow —This group includes not only sprains but also those cases with pain on extension referred to as "tennis-elbow" The sprains have been improved and the tennis-elbows have done extremely well

Wrist —Not many cases of this type have been treated and possibly some have been wrongly diagnosed as tenosynovitis There has been improvement

Knee —Few cases have presented themselves The bulk of traumas in this area result in a torn lateral ligament ruptured meniscus or an effusion into the joint none of which have been treated by this method The few patients treated have been benefited

Contusion of bone —Patients who have had trauma to bone with residual pain have not been improved to any extent by cutaneous anæsthesia

Pain of indefinite origin —This group includes patients with vague pains in the back neck or extremities, in which a definite diagnosis has not been made The treatment has only been given when an X ray has proved negative and local and systemic examinations have failed to reveal underlying disease In 4 instances the patients recovered, the result in the other 2 was indefinite

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may arise either from the employment of preparations of low potency or from ignorance of the potency of the preparation used, from whatever cause it arises it constitutes a waste of valuable material undesirable at any time but now specially to be avoided

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VITAMIN-C DEFICIENCY IN "IRRESPONSIVE" PERNICIOUS ANÆMIA

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Since the latter part of the winter of the present year we have been faced with the phenomenon of cases of pernicious anæmia proving wholly or relatively irresponsive to liver treatment Various considerations led to the belief that this might be due to a deficiency of vitamin C In certain of these cases the effect of the exhibition of ascorbic acid in full dosage has been such as to confirm this view The following three are illustrative cases

CASE-RECORDS

Case 1 —Female, age 57 First treated at the Royal Hospital in October, 1937 Maintenance established on a dose of 2 c cm of a liver extract of known potency every month In December, 1941, the patient noted that she was not so well, at this time her doctor was unable to procure further supplies of the liver preparation theretofore used and changed to another brand In spite of greatly intensified dosage the patient's condition deteriorated steadily and trial was made of yet another preparation The deterioration in general condition continued When taken into hospital on May 3, 1942, the blood showed Hb 32%, red cells 1,230,000 per c mm, CI 1 3, reticulocytes 2/1,000

Neither of the last two preparations of liver used had been tested in this department and it was thought that the failure to respond might have been due to their relative impotency, the patient was therefore treated with a preparation of known potency in dosage far exceeding that established as "standard" for this department (Della Vida 1942) This dosage produced only a slight and unsatisfactory reticulocyte response Vitamin C in the form of 'Redoxon' (Roche) was then given in doses of 300 mg daily With continuation of the liver dosage the blood condition improved as shown in fig 1 The patient is now well and a blood count four weeks after admission showed Hb 80%, red cells 4,170,000

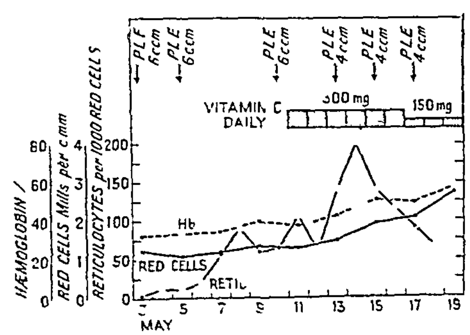

Fig 1—Blood response to parenteral liver extract of known potency (PLE) and vitamin C

Case 2 —Female, age 67 On admission to the Royal Hospital blood showed the typical picture of pernicious anæmia Hb 49%, red cells 1,650,000, CI 1 48, CV 24%, MCV 145 c μ MD 8 5 μ, reticulocytes less than 1/1000, white cells 5400 (polymorphs 62%, lymphocytes 34%, monocytes 2%, eosins 2%) Shift to the right in the Arneth count, anisocytosis, poikilocytosis and basophilic stippling of the red cells Van den Bergh reaction faintly positive indirect Fractional test meal no free HCl

This seemed so definitely a case of pernicious anæmia that it was selected for assaying the potency of a batch of newly prepared liver extract not yet put on the market To this there was no appreciable reticulocyte response and no rise in the red cells In spite of the fact that preparations of liver from this particular firm had always proved highly efficient this aroused suspicion as to the potency of this batch As a test the patient was given the standard dosage of a liver extract of known potency To this also the blood failed to make a satisfactory response The effect of the exhibition of vitamin C in addition to the liver extract is shown in fig 2 A month after discharge from hospital the blood picture shows Hb 73%, red cells 3,840,000, CI 0 95

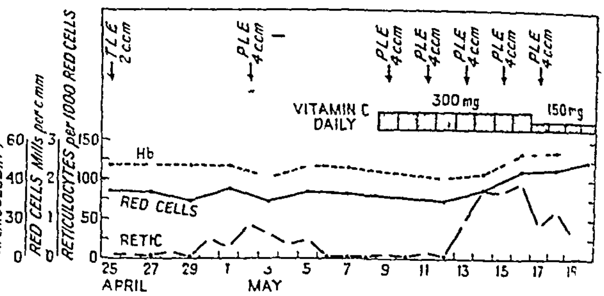

Fig 2—Response in case 2

Case 3 —Male, age 69 First treated at the Royal Hospital in May, 1937 Maintenance dosage established at 4 c cm every eight weeks At the beginning of 1941 the red cell count dropped below 4 000,000 though the patient made no complaint of feeling ill In March, 1942, the red cells were 2 5 millions and the patient's general condition was progressively deteriorating The usual dose of liver extract did not stop the fall of the red cell count On admission to the hospital on May 20, 1942, the blood picture was Hb 36%, red cells 1,190,000, CI 1 51

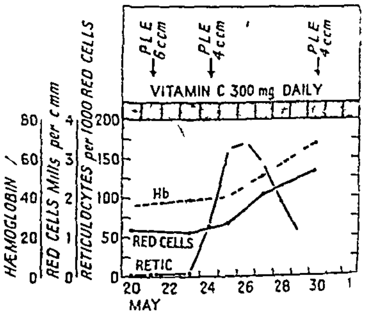

Fig 3—Response in case 3

As shown in fig 3 liver extract of known potency together with vitamin C rapidly restored the blood picture to normal Five weeks after admission the blood count is Hb 82%, red cells 5,280,000, CI 0 78

DISCUSSION

At the time that these patients were under observation —during the spring of the present year—a number of sufferers from pernicious anæmia attending at this department were found in spite of their usual maintenance dosage of liver to be showing a progressive fall in the red-cell count After a month's course of vitamin C 100 mg daily all these patients without any increase in their maintenance dose of liver extract showed a rapid increase of up to 1,000,000 red cells per c mm with corresponding improvement in the general health

A study of the records of pernicious-anæmia patients attending the department reveals the hitherto unnoted fact that during the spring of 1941 and to a lesser extent that of 1940 a proportion of them showed a deterioration in the blood picture, after July the state of the blood tended to improve

That the diet of our general population should be deficient in vitamin C during winter under war conditions was to be expected, that such actually has been the case has been demonstrated by Harris (1942) and Francis and Wormall (1942) The part played by vitamin C in hæmopoiesis is well recognised The above observations serve to demonstrate that in pernicious anæmia, even with ample dosage of the antianæmic principle, hæmopoiesis cannot be returned to normal in the face of a deficiency of vitamin C The implications of this observation both in the treatment of pernicious anæmia and in the testing of liver preparations for therapeutic use are of obvious importance

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Francis G E C and Wormall A (1942) *Ibid*, i, 647
Harris, L J (1942) *Ibid*, i, 642

relieved for many hours each time the two tender spots on the breast were frozen. This helped us to tide her over till she got ease from a moulded support that carried the breast at the relevant time.

* * *

These are only a few examples of relief out of more than a hundred patients treated with ethyl chloride. Many painful conditions were completely cured. Some with low back pain who had not been able to move with comfort did so easily after being frozen. Others were glad of whatever relief they got—an old patient, for instance, with lumbar vertebræ like the sides of guttering candles, whose discomfort was checked by physiotherapy during the time only of its application, had relief with lumbar freezing for seven hours and came repeatedly to get it. Such relief of pain (apart from cure of its cause) by simple harmless means which can be tried again and again is, as a friend used to say, "not nothing."

My colleagues, I know, felt a robust dubiety, till they began to try the thing for themselves. Many too, will picture these patients as objects of nothing more than suggestion enforced by a volatile jinnee from a bottle. And they will be wrong, as my last case proves. Here is a note written by her mistress, Dr. Meave Kenny. Blitz, a small dachshund, aged 7 months, "chased a six-wheel army lorry and was run over by same sustaining severe crushing injury of right paw but no other hurt. Was quite unable to set paw to ground, lay on side moaning and distressed. X rays showed that there was no fracture present; the paw and whole leg, however, were swollen, extremely tender and painful, causing the patient to drool copiously and weep. Four hours after the accident the paw was frozen. Relief was immediate. The patient, who at the start was non-coöperative and belligerent, affectionately saluted the surgeon, leapt off the couch and ran about the room on all paws with only the trace of a limp. About five hours later, the patient not having exercised much in the interval, complete lameness returned and pain again began. Further freezing led once more to complete relief. The slight residual limp and swelling vanished within the next four to five days. The patient will ever pray . . . ."

CASE OF STAPHYLOCOCCAL PNEUMONIA

RECOVERY WITH SULPHATHIAZOLE

JOHN GORDON, M.A. CAMB., M.R.C.S.
FLYING OFFICER R.A.F.V.R.

TRUE staphylococcal pneumonia is relatively uncommon, and with the recent introduction of sulphathiazole as a means of treatment a case that recovered seems worth recording.

At sick parade on the morning of March 31, 1942, an aircraftsman complained of pain behind the eyes, sore throat, cough and pains in the legs; his temperature was 102·6° F., pulse-rate 96 and respirations 24 per min. His throat was red, there were no abnormal physical signs in his chest, and he was admitted to the local isolation hospital as a case of influenza. There the local medical officer of health who examined him found no abnormal physical signs and ordered sulphapyridine 1 g. four-hourly. Thirty-six hours later the patient's temperature had dropped to 98° F., his pulse-rate to 86 and his respirations to 20, but on the third day his temperature again rose to 102·6° F. with a pulse-rate of 90 and respirations 24. His cough was worse, his sputum was tough and rusty, and there was dullness at the base of the right lung with many râles. The sulphapyridine was continued, a purgative was given as he had been constipated, and kaolin plasters applied to his chest. His temperature began to settle again but his cough was still troublesome and he complained of tightness in the chest. On the seventh day he began to get dyspnœa, and the dullness and râles were present at the bases of both lungs. On April 7 his evening temperature was 100·4° F., his pulse-rate 120 and respirations 32; he was given oxygen and brandy. Next morning the temperature had risen to 102° F. with a blood-pressure of 140/50 mm. Hg and as he was cyanosed the sulphapyridine was discontinued and 1 c.cm. nikethamide was given three times a day with the oxygen and brandy. On April 10 his general condition was considerably worse, his blood-pressure was 125/50, and he was coughing up copious blood-stained sputum; the prognosis was exceedingly grave. Next day 5 c.cm. of soluble sulphapyridine was given intramuscularly at noon, followed by 1 g. of sulphapyridine by mouth every four hours. A bacteriological report on the sputum showed *Staphylococcus aureus*, with a few Pfeiffer's bacilli; the blood picture was normal with no leucocytosis. On April 15 the man was even worse: his pulse, temperature, and respirations all began to rise, and as a supply of sulphathiazole was now available he was given 2 g. of the drug every four hours. Two days later he looked much better and his temperature had fallen, but he was still coughing up profuse amounts of sputum and was still cyanosed. Twice daily injections of atropine sulphate gr. 1/200 were given to relieve the congestion. By April 23 he was much improved: his blood-pressure was 112/80, and his white-cell count was 11,000 per c.mm. A throat swab still showed a pure culture of *Staph. aureus*. From this time he had a stormy convalescence, often running night temperatures, but his pulse remained fairly steady and his respiration-rate soon came down to within normal limits. On April 26 the sulphathiazole was discontinued and as it was now possible to move him he was X rayed; this still showed some consolidation at the bases of both lungs. He was given a simple expectorant mixture, and gradually improved until he was discharged from hospital on May 19, after fifty days' treatment.

The geographical position of the area from which I write made the return of bacteriological reports slow, and the sulphathiazole was some time in reaching us; hence the delay in starting sulphathiazole treatment.

Two points seem interesting in this case—first, the complete failure of sulphapyridine in combating the staphylococcal infection, and secondly the depressing effect this drug seemed to have on the leucocyte response. Sulphathiazole seemed to have an opposite effect, producing a well-marked improvement in forty-eight hours, and allowing the leucocytes to respond to the infection at once.

My thanks are due to Dr. R. Stevenson Doig, medical officer of health of this area, for allowing me to publish details of the case.

Reviews of Books

The March of Medicine, 1941

By various authors. New York: Columbia University Press. London: Humphrey Milford, Oxford University Press. Pp. 154. 13s. 6d.

THE sixth series of lectures for the laity, delivered annually at the New York Academy of Medicine and subsequently published under this title, is well up to standard. Of this year's set three might be described as thoughtful, two informative and one historical. Writing one of the first group Dr. Alan Gregg reminds us that science is limited in that it does not give us tastes or values; for these things we must look to humanism to enable us "to counterbalance the exultations and threats of the specialists"; only thus can we become properly educated. Dr. William Healey argues that a knowledge of psychiatry would teach the normal man more about himself and so help him in his social relationships. Dr. Irwin Edman—a doctor of philosophy not of medicine—wants physicians also to be philosophers, but can they help being so? On the purely informative side Dr. Oscar Riddle outlines the potentialities of endocrinology and Dr. Francis Carter Wood does something to dispel the all too widespread notion that we know nothing about cancer. Dr. Henry Sigerist's lecture on Paracelsus paints a sympathetic and understanding picture of that uncouth genius.

The Pleuro-Subpleural Zone

J. SKLADAL, reader in general and experimental pathology, Caroline University, Prague. London: Cambridge University Press. Pp. 103. 10s. 6d.

THE publication of this monograph, delayed by the German occupation of Czechoslovakia, is the outcome of some ten years clinical and experimental research into the properties of the pulmonary expiratory sound and their implications in the diagnosis of various corticopleural lesions of the lung. Dr. Skladal first noted while studying the origin of isolated superficial râles, that if the coughing ordinarily used to elicit them is replaced by a sudden expiration a double expiratory

DISCUSSION

Undoubtedly the most important feature of this method of treatment is the early use of active movement As a result of the initial trauma local pain reflexly sets up muscle spasm to prevent movement and further pain Through some mechanism not readily explainable the ethyl-chloride spray removes the pain which in turn diminishes the amount of muscle spasm and permits the muscle to function again When this has been accomplished, with or without *a second or third application* of the spray, sufficient lymphatic circulation is started to remove the local traumatic œdema On theoretical grounds one would expect an increase in the œdema on the early institution of active movement, and this does occasionally happen, particularly in sprained ankles Its presence, however, is no indication to discontinue the treatment The swelling may increase for 24–36 hours but then quickly disappears so that by the 5th or 6th day little if any œdema remains The speedy and relatively complete diminution of the swelling not only allows a fuller range of movement but prevents the stagnation and chronic induration which leads eventually to periarticular fibrosis and limitation of movement

Naturally the best results are with early and mild traumas, but quite severe lesions with extensive swelling and associated ecchymosis have also been enormously improved immediately and have recovered rapidly It is unwise to treat fractures of bones and tears of major joint ligaments in this manner but fortunately the degree of anæsthesia obtained is not sufficient to permit of this being done

Ready cooperation of the patient is a great help We have found that soldiers may be returned to full duty in a minimum of time while during their period of light duty they have relatively little incapacity

So far by way of complications, there has been little beyond local irritation of the skin There may, of course, be some cases of traumatic arthritis developing later owing to the early use of the part but it is too early for a definite judgment on this possibility

SUMMARY

Local anæsthesia by the ethyl-chloride spray, followed by active movements, has been used in 109 cases of soft-tissue injuries

The method is simple to apply and gives immediate relief and rapid recovery in a large proportion of cases

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FREEZING WITH ETHYL CHLORIDE
TO RELIEVE PAIN AND LOSS OF MOVEMENT

ARNOLD K HENRY
M B DUBL, M CH (HON) CAIRO, F R C S I
EMERITUS PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF EGYPT

SOME five years ago I heard through a casual visitor from Vienna that the ethyl-chloride spray which we here employ mistrustfully for local anæsthesia there served to encourage patients in moving refractory fingers Just then a waiter for whom we had opened a superficial whitlow returned with his index finger fully healed but so impotent that he was unable to carry a plate It was clear that his case required nothing but encouragement, and I used the ethyl-chloride spray as auxiliary Immediately after the freezing he was able to cross the room carrying a large kidney-dish filled with water between his thumb and the cold finger This quick improvement I put down to the power of suggestion, then I forgot about the method for four years My interest was revived suddenly by my friend, Dr J E O'Loghlen, to whom I and many postgraduate students owe our first acquaintance with a variety of simple, effective expedients for everyday use This time, however, the factor of suggestion seemed to fade into the background, while new factors, just as intangible, came to the fore The following few notes are mere pointers, touching the fringe only of what has developed here in the hands of O'Loghlen

One of the patients who did much to break down my own scepticism was an old lady we knew well I had pinned her fractured neck of femur uneventfully From the first week she had made full movements, but had borne weight on the injured hip only three months later Nine months after operation she began to feel pain in the hip, an X ray showed flattening of the left femoral head She was, we knew, a person of character who did not complain easily, and we failed entirely to relieve her heat, Scott's dressing, 'Veganin' traction did not help at all At a loss, I froze a palm's width of skin in front of the left hip—freezing the skin three times and waiting, as we do, for the red reaction to show between first and second freezings Within two minutes of the third freezing she said "There's a queer feeling going through the joint from front to back," an unusual thing for a "frozen" patient to remark attention being focused more on the surface Asked what kind it was she said "a hot feeling" She also said that her pain had gone We (for there were five witnesses) watched her move her hip, previously held motionless on account of pain, fully in every direction But freezing does not change the shape of femoral heads, and after five days her pain returned That, however, was the first break in her suffering

This patient's remark about the hot feeling led us to look for a temperature change deep down in tissues under an skin area which had been frozen Major Ruscoe Clarke and I made a personal test A hollow needle containing a thermocouple was thrust into the right and left thighs Each needle touched the outer side of the femur at the middle third and was then withdrawn ¼ inch When the mirror-galvanometer reached its zero point the skin in front of one needle was three times widely frozen, and erythema appeared, as is the rule The experiment lasted 80 minutes and during that time the deep temperature did not change in the least

An old naval rating injured his right shoulder and came to me with the diagnosis of probable rupture of the supraspinatus tendon The sensitive points, however, when I saw him, were remote from that site, and maximum pain on pressure was over the tendon of teres major, X ray was negative For six days he had been unable to abduct his right arm from his side After freezing the skin over his shoulder (or rather after making it very cold, for no frost appeared) he was at once able to abduct the arm through 30°, and in a week, with a second freezing, he raised the limb well above his shoulder

One of my younger colleagues hurt his wrist A first X ray disclosed no fracture He could not flex his fingers and his whole wrist was extremely painful A deep hæmatoma showed faintly through the skin in front of the lower end of the radius In the interval before the second X ray—hoping that it too would be negative and that I was dealing with a sprain—I froze a bracelet round the painful wrist Within two minutes he was able to open and close his fist and move the hand and wrist painlessly in every direction Complete relief lasted four hours, then pain and disability returned in full The second X ray showed a crack in the articular surface of the scaphoid Ten minutes after my colleague had gone a woman came with exactly the same painful inability to close her fist, and with an almost identical hæmatoma but with a different fracture—a crack in the distal end of the radius She, like my colleague, could close her hand and move her wrist as soon as the part had been thrice frozen Her relief, unlike his, was lasting though slight pain recurred in five hours

A secretary in a department of pathology, after wrenching her right wrist, found it impossible to do her typing There was a tiny, tender thickening of extensor pollicis brevis beside Dupuytren's snuff-box, and we diagnosed her case as one of stenosing tenosynovitis Later she found writing difficult she was also quite unable to cut cloth with scissors, for stretching out *her thumb* caused distress After freezing she could perform these acts painlessly during the next three or four hours, she even used the scissors to cut thick, folded wads of paper We gave her this relief as often as she cared to come for freezing, and we subsequently cured her by de Quervain's operation, stripping the adherent and locally thickened synovial sheath round the tendons of abductor longus and extensor pollicis brevis

In most of the cases I have treated by freezing—or sometimes by cooling for striking relief can be got short of ice formation—pain or rigidity were in limbs or back But a nurse suffering acutely *during* several months from pain in the left breast, which began before a menstrual period and lasted through its early phase, was completely

THE LANCET

LONDON SATURDAY, SEPTEMBER 5, 1942

HOW AND WHY INFANTS DIE

Despite the cock-a-hooping of the Minister of Health there is an undercurrent of dissatisfaction with our infantile mortality This was manifest in our correspondence columns following a recent study[1] by McNeil of death in the first month and the first year of life Neonatal mortality has here as elsewhere, with the notable exception of Chicago, been unamenable to any direct effort to abate it, and England (and still more Scotland) makes a poor showing against Holland, Sweden, Switzerland and Australasia in the death-rate of the rest of the first year McNeil's thesis is that this excessive rate, now on the increase, is due to serious defects in our nursing and medical control of the baby after birth defects which, he is convinced, can be put right by teaching and training[2] The first requisite is to be sure of the facts, and it is the particular merit of an inquiry by Spence and Miller into a year's infant deaths in a northern city that they were not content with an analysis of the certified causes of death but devised a critical and personal form of investigation *Every such death was reported to them by the local* registrar within 24 hours of its registration and themselves possessing clinical experience of disease in infancy they were able to enlist the willing cooperation of all the certifying practitioners in the city The investigation was preceded by a meeting at which its objectives and methods were discussed and decided But even so there were gaps in the inquiry In only 54 out of the 272 deaths was an autopsy done and then not always by a trained pathologist, and only 19 were in the neonatal period And almost half of these examinations failed to establish the cause of death The more or less definite labels on the registrar's certificates, when revised in the light of informed ignorance, found their way into (1) a group called birth-deaths in which the exact cause of death was not stated, it might have been asphyxia, intracranial hæmorrhage or infection, (2) a group called infection of unknown origin, (3) a group of cases in which no opinion could be given, (4) a group of deaths *apparently* due to prematurity alone These four groups numbered 38, 32, 41, 47, making an aggregate of 158 out of a total of 272 Miller assumes the reader's knowledge of this inquiry in his article on death certification in infancy which appears at the front of the present issue He begins by welcoming the new liberty given in 1940 to the certifier of stating what *started* the baby's illness rather than the incident which carried it off This change of outlook in the Newcastle series would mean many more deaths ascribed to the effects of birth and many more also to gastro enteritis—pointing helpfully to "defects which can be put right" rather than to the prematurity which can only be lived down Seven children dying unhelpfully of "congenital debility" had in a stricter review succumbed to birth injuries (3), infective causes (2), extreme prematurity (1), leaving one unfortunate who had just passed out without giving a clue Asphyxia or atelectasis, on closer examination, all implied some trauma or accident during delivery, often being the sign of intracranial bleeding Miller shows good cause indeed for a revision of classification by a committee of clinical pædiatricians and a special form of certificate to include such additional data as birth-weight, feeding and position of child in family

Although the Newcastle inquiry does not emphasise the importance of the first month, it is then that the problems of prematurity and breast-feeding can be best dealt with, and that the techniques against infection can be learned It is then that the problems common to obstetrics and pædiatrics can be *studied* We badly need some conjoint investigations here obstetrician, pædiatrician, pathologist and physiologist It will require team work of a high order to bring the major problems of prematurity, stillbirth, and neonatal death under searching examination The first month is the beginning of pædiatrics, and very few pædiatricians have any clinical experience of it Midwives are quite inadequately instructed in its pædiatric problems and say goodbye to the baby early in the second week, there is no proper liaison with the health visitor, whose instruction and training in dealing with the baby at this time are very poor The newly qualified doctor has heard little or nothing about the baby in the first month Without study, there can be no teaching, without teaching, nursing and medical practice are bound to be mismanaged Moreover in the new Maternity Services Act there is no specific provision for the expert pædiatric control of the baby in these first dangerous weeks after birth, there is in fact no pædiatrician on the Central Midwives Board A beginning might be made in some of the large centres where pædiatricians intimate with hospital neonatal problems could be used in domiciliary maternity practice It would be as unfair as it would be idle to blame town councils or child welfare services for the present state of infant health, it is a big and difficult problem and the first essential for its control is study Perhaps the chief service of the Newcastle inquiry will have been to show how little we know about these problems Further studies of the kind in all large centres where there are pædiatricians capable of giving them skilled direction should *count as war emergency* The last war initiated the antenatal and the postnatal clinic There is a gap between them still to be bridged

ANÆSTHESIA FOR THE BELLY WOUND

From the anæsthetist's point of view total war has divided the wounded into two classes—those in the cities where facilities for modern anæsthesia are available, and those on the battlefield where apparatus is necessarily minimal To assert that modern methods of anæsthesia have no advantage over the rag-and-bottle is to deny the improved results and safety of the modern major abdominal operation The older surgeons were no less skilled, they too preached and practised careful preoperative treatment, but who would deny the now nearly negligible mortality of an operation such as partial gastrectomy, the very fit patient at the end of the operation and a convalescence in which, as Lahey says, the rôle of the surgeon is but that of the "*innocent* bystander"[2] Seven sound may sometimes be heard This second sound may have two distinct characteristics (1) reduplication (shortly after the sound usually heard in expiration there follows a second sound which may be similar to the first or acoustically more prominent and tubular), (2) triple sound or pulmonary gallop rhythm (three successive sounds—two comprising the reduplication already described and another sound, less intense than the second, following it without interruption) Metrically expressed the reduplication is iambic and the triple sound anapæstic Dr Skladal has studied the physics of these sounds by means of various instruments The double sound was reproduced on gramophone records and analysed by oscillographs made from gramophone discs as well as from direct recordings and by Fleisch's aerotachograph which registers the speed of the air column The expiratory output was studied with the manometric mask of Pech and the volume of the expired air with a spirometer Lastly, a bellows model was constructed to reproduce the expiratory sounds By means of these experiments he was able to confirm his auscultatory observations, and could explore the clinical and radiological signs of corticopleural lesions of the lungs These included visceropleural thickening and lesions of the subpleural areas of the lungs, such as atelectasis, fibrosis and "splenopneumonia" (used to denote a relatively benign form of pneumonia with a sero-albuminous exudate in the alveoli and physical signs resembling those of a pleural effusion) The true corticopleural syndrome, as he describes it in association with his characteristic auscultatory sign, is a thickened pleura with a consolidated cortical parenchyma beneath, whether produced by œdema, sclerosis, congestion or inflammation Radiologically the lesions are characterised by a cortical radio-opacity, likened to "sugar icing on cakes", several examples are reproduced A pseudo-cortical syndrome is also described, caused by simultaneous lesions of the cortical border and the deep portions of the lung Dr Skladal has evidently taken immense pains in collecting his facts and in checking them by laboratory experiment, the result is a closely reasoned and scholarly study

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[1] McNeil C *Lancet* 1940 i 819 869, 912 993

[2] *Brit med J* 1942 i 429

Thoracic Surgery

Charles W Lester, MD, FACS, assistant clinical professor of surgery, New York University London Humphrey Milford, Oxford University Press Pp 141 12*s* 6*d*

For those students of thoracic surgery who like their facts in highly tabulated form this small book will be welcome Each chapter consists solely of classified and numbered sections and subsections with some appended references The few sentences of more than a word or two indicate the views of Professor Lester himself, and the average reader may well regret that these have not been elaborated to the exclusion of some of the baldly stated and less important facts The subject matter is as up to date as could be wished The surgeon with ambitious designs on carcinoma of the lung or œsophagus will find the possible procedures detailed for him The same applies to recently developed operations on the heart for coronary thrombosis or patent ductus arteriosus The book is interleaved with blank sheets which invite notes or illustrations

Voles, Mice, and Lemmings

Problems in Population Dynamics Charles Elton, director of the Bureau of Animal Population, Oxford London Humphrey Milford, Oxford University Press Pp 496 30*s*

The interrelationship between man and the lower animals is apparent in many fields of life The medical aspect of this relationship is important to the profession, but it is as well to be reminded occasionally of the profound influence of the animal kingdom on man's economic and social well-being The first part of Elton's book is historical dealing with vole and mouse plagues throughout the world from the Pentateuch to the present time The earlier plagues make fascinating reading but are less scientifically satisfying than those of more recent date The second part of the book deals with the fluctuations in density of voles and mice in Great Britain and Scandinavia The work of Elton and his colleagues in the Bureau is described Their methods of approach to ecological and epidemiological problems entail the measurement of fluctuations and density of population by means of various census operations, attempts to discover controlling causes in different environments by assessing breeding mortality and movements in their framework of landscape, vegetation, climate and animal associates, an intelligence system for following the vole population cycle in the field a staff of ecologists to organise the collection of material at the crucial time, a stock of laboratory-bred voles for experiments, and pathological investigations Elton also discusses the effect, in northern Canada, of the density of the mouse population on fur-bearing animals and thus on man, mice are the main food of the foxes it seems, and thus density of fur-bearing population follows the density of mouse population, so that man's chief occupation in that part of the world depends ultimately on the number of mice about The field covered in this book is a vast one, since an immense number of questions await elucidation, but here at least is a scholarly attempt to define the problem

Aids to Surgery

(7th ed) Cecil Joll, MS Lond, MD Brist, FRCS, Reginald C Ledlie, MB Lond, FRCS London Baillière, Tindall and Cox Pp 654 10*s*

Attempts to compress the surgical knowledge required for examination purposes must of necessity result in a book which, though containing sufficient information, fails to convey the broad principles of surgical teaching, but for a concise work to read in conjunction with one of the longer textbooks, this little book will supply a demand Brevity and tabulation, especially in the paragraphs on treatment, may sometimes give erroneous impressions, for instance, incision, heat, passive hyperæmia, serum and general measures are prescribed, in that order, for cases of acute cellulitis, and the accepted principle of delaying the knife in this disease is not mentioned Amputation "at the lowest point at which vessels can be felt to pulsate" is recommended for those cases of senile gangrene which require operation, this seems drastic, and if practised will lead to many disarticulations at the hip The incision described for cases of flexor sheath suppuration of the thumb extends too far proximally, and would divide the motor branch of the median nerve On the whole, however, the book is informative and accurate Abdominal surgery is well described and space is given to alternative methods of treatment The section dealing with injuries has been condensed, as the authors state, from Watson-Jones's textbook on fractures, and obsolete methods which still linger in many surgical textbooks have been omitted

Essentials of Electrocardiography

(2nd ed) Richard Ashman, PhD, Edgar Hull London and New York Macmillan Pp 373 21*s*

The authors, who hold the chairs of physiology and medicine respectively at New Orleans, write clearly and the student should have no difficulty in grasping the essentials of electrocardiography from their book A full description of the theoretical basis will be valued by those interested, but since this aspect of the subject is still largely hypothetical it may be omitted by those who are not Just the right number of tracings are reproduced to balance the text The common abnormalities of the cardiogram are first described according to topography and in a later chapter in relation to ætiology The recent work incorporated in the book has been well selected

Dictionary of Scientific Terms

(2nd ed) C M Beadnell MRCS, FZS London Watts and Co Pp 232 2*s*

Anyone who reads much modern scientific work must inevitably, from time to time, meet words unknown to him, and inadequately defined or not to be found in an ordinary dictionary To give some help in this difficulty Admiral Beadnell has compiled this pocket dictionary It will seldom be found wanting, and the ingenuity and terseness of the explanatory information are impressive It is rather terrifying that the growth of science should have minted such various and often monstrous coinages to express its ideas, especially since each new advance makes still more new coinages necessary and at the same time banishes many previous terms from circulation! Thus much of the vocabulary at present in vogue is likely to be incomprehensible to future generations extensive use of local sulphonamides **WOODS**[13] has shown that in vitro procaine is a potent inhibitor of sulphonamide activity The rapid absorption of the local anæsthetic the fact that it is really placed in the abdominal or mesentery layer and not in the cavity itself probably discounts any such action but no experimental work on this aspect has yet been recorded Finally, there is a tendency to regard the abdominal wounded as hopeless and the time as better spent in attending to other casualties Some belly wounds by the nature of the injury must be mortal, but **GORDON-TAYLOR**[14] has reviewed a series of over 600 cases that reached the operating-table, and half of these survived That makes abdominal surgery worth while

SULPHONAMIDE-RESISTANCE

THE development of resistance to sulphonamides is dramatically illustrated by a case reported from Cincinnati, where the subject has been given much attention by **SCHMIDT**, **SESLER** and others[15] A patient suffering from pneumococcal endocarditis was treated by repeated courses of sulphapyrazine At first the organism was quite sensitive to the compound in vitro and the patient responded definitely though temporarily, to each course but the organism s resistance gradually increased, as shown by in-vitro tests, until eventually it resisted high concentrations of the drug and no further clinical response to the treatment could be obtained The history shows the course of events when an organism is maintained in long but ineffective contact with a sulphonamide compound This phenomenon forms a close parallel to the well-known development of arsenical resistance in the trypanosomes of African patients treated unsuccessfully with tryparsamide

Besides its theoretical interest drug-resistance is obviously of great clinical importance[16] It has been described in streptococci pneumococci and gonococci, and it may be expected to develop in any organism which is initially sensitive to sulphonamides When it occurs, it extends to all compounds of the group, although an organism which resists the weaker bacteriostatic action of sulphanilamide may sometimes succumb to a more active substance such as sulphathiazole , on the other hand the resistance does not extend to bacteriostatic compounds of a different type such as penicillin or gramicidin[17] It is not known with certainty how quickly resistance may develop in clinical practice, but the laboratory evidence suggests that development may be rapid Thus when pneumococci were passed through mice treated with insufficient doses of sulphapyridine resistance was much increased after 7–15 days, and after 13–23 days it was maximal , when pneumococci were cultured in weak concentrations of the same compound in-vitro resistance was raised within 80 hours[18] In the case of endocarditis referred to the first serious increase of resistance took place between the 31st and 71st days, and according to **HAMBURGER** and his colleagues there is less hazard of resistance developing during short intensive treatment such as is given for lobar pneumonia **FRISCH**[19] reports that strains of pneumococci isolated from patients after chemotherapeutic treatment were definitely more resistant than those isolated before it , this might be due either to the weeding out of sensitive strains or to an acquired resistance **FRANCIS**[17] has recorded a minor epidemic caused by a sulphanilamide-resistant strain of streptococci in a plastic-surgery ward There was no evidence to show whether the resistance of this strain was spontaneous or acquired during treatment, but the conditions of a wound dressed daily with sulphanilamide, which often diminishes the infection without destroying it completely are clearly favourable to the development of resistance To prevent the spread of such resistant organisms a rigid dressing technique is essential

Once a strain has become maximally resistant it can maintain its resistance for long periods[20]—**SCHMIDT** and others[18] found that it was not diminished by passage through 200 mice or by repeated subcultures in vitro—so that the same lack of clinical response may be expected in all the patients who have become infected, directly or indirectly from the original source There is some evidence that sulphonamide-resistant pneumococci persist in the nose and throat of patients as long as four months after the clinical cure of pneumonia It seems possible however, that strains which are *only* partially resistant may revert to their original sensitivity Some of the sulphonamide compounds are more apt to provoke resistance than others Sulphanilamide does so most readily, sulphapyridine less readily while sulphathiazole is the least liable of the three[20] It may be that streptococci become resistant less readily than pneumococci, on which most of the work to date has been done When sulphonamide-resistance does occur it is important to recognise it at an early stage so that the patient is not uselessly subjected to the toxic effects of further sulphonamide treatment The primary indication will be the absence of the expected clinical response, but when resistance is suspected it may be confirmed by various procedures—e g , a culture of the organism (streptococcus) may be smeared across a plate, part of which contains sulphanilamide,[17] or the sputum from a case of pneumonia may be injected intraperitoneally into mice treated with sulphapyridine and into control untreated mice, the presence or absence of resistance being shown within 18 hours by the rate of multiplication of the organisms in the peritoneal exudate[21] When resistance has thus been confirmed it is useless to continue with the sulphonamides and other measures have to be adopted In cases in which resistance is not initially present every effort should be made to avoid producing it by faulty therapy Small ineffective doses should be eschewed and intensive courses of treatment given from the beginning (with due precautions against urinary blockage) if the expected response is not obtained in a few days the treatment should be discontinued Treatment continued over a long period besides being responsible for most of the toxic manifestations, will almost certainly produce drug-resistance The nature of the change which underlies drug-resistance is obscure The morphology, cultural characteristics and virulence of the years ago LAHEY's[1] mortality for radical partial gastrectomy was 18%, now it is less than 1% (1 death, from pulmonary embolus, in 154 operations), and he hands the credit for the fall to the improvements in anæsthesia. To fail to apply these principles to the treatment of the wounded abdomen would be irrational. But that does not mean that one "standard" type of anæsthesia is to be employed for every abdominal operation.

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[13] Woods D D *Brit J exp Path* 1940 21 74

[14] Gordon Taylor G *Surg Gynec Obstet* 1942 74 375

[15] Hamburger M jun Schmidt L H Ruegsegger J M Sesler C L and Grupen E S *J Amer med Ass* 1942 119 409

[16] See *Lancet* 1942 i 596

[17] Francis A E *Ibid* 1942 i 408

[18] Schmidt L H Sesler C and Dettwiler H A *J Pharmacol* 1942 74 175

[19] Frisch A W *J Bact* 1942 43 72

[20] Carpenter C M Charles R and Allison S D *Proc Soc exp Biol NY* 1941 48 476 Sesler C L and Schmidt L H *J Bact* 1942 43 73

[21] Moore F J Thomas R E and Hoyt A *J Amer med Ass* 1941 117 437

LAHEY and many surgeons in Britain use light or heavy spinal anæsthesia for their abdominal operations. Colonel J DAVIS,[2] writing in the *Military Surgeon*, and STORCK,[3] who took part in a special American panel discussion on abdominal trauma, regard spinal anæsthesia as the most suitable for the wounded abdomen. Few in this country will, however, countenance this in the presence of shock, and GORDON-TAYLOR[4] goes as far as to say "Spinal anæsthesia spells certain euthanasia for the shocked abdomen." The work of O'SHAUGHNESSY and SLOME[5] is often quoted in support of spinal anæsthesia; for they showed that in the experimental fractured femur of cats shock could be delayed or favourably influenced by this procedure, but they made a special point of stressing that it was dangerous to apply this reasoning to all types of shock, and especially that following trauma of the intestines. It is also dangerous to argue that the fall of blood-pressure in spinal anæsthesia does not matter and may be checked by suitable injection. In the unshocked patient the fall does not produce, nor is it associated with, any reduction in the circulating blood-volume.[6] But in shock the transport available to carry oxygen to the vital centres is reduced and the pallor, coldness and generalised vasoconstriction are all part of Nature's rationing scheme. Forcibly to dilate unimportant blood-vessels with a spinal anæsthetic is sabotage of the transport system. JULIAN SMITH,[7] writing of his Libyan experiences, pointed out that a large vessel, usually in the mesentery, is almost invariably severed in the wounded abdomen. The anæsthetist should constantly visualise this large vessel, for the time to operate is often left to his decision.

To delay anæsthesia in the abdominal wound in the hope that shock will improve with time is a form of wishful thinking that still needs checking. The vital centres are damaged early, and unless the bleeding is stopped early resuscitation measures will not catch up. That hæmorrhage is one of the most important factors in the production of abdominal wound shock is shown by comparison with other abdominal injuries. The patient with a stab wound, with severed bowel only, usually looks quite fit; the man with a ruptured bowel, with no penetration of the abdominal wall and no vessel damage, shows for several hours little alteration in pulse or blood-pressure—as MASSIE[8] and ESTES[9] have pointed out, there is a striking absence of symptoms indicating mortal injury for two hours. The importance of early operation for the wounded abdomen has also been urged by Russian surgeons. Following the work of VISHNEVSKIY[10] they maintain that with local anæsthesia operation can be started even while the patient is in a state of shock, and PSHENICHNIKOV of Moscow[11] even says that as the mesentery is being injected the shock passes off. Using two operating tables they noted a striking difference between those under general and local anæsthesia. They used 0·25% procaine (sodium chloride 5, calcium chloride 0·125, potassium chloride 0·075, procaine 2·5, distilled water 1000 parts). After local infiltration and generously saturating both recti, the abdomen was opened and the parietal peritoneal surfaces widely infiltrated. A presenting intestinal loop was then pulled out, the mesentery injected and the infiltration gradually advanced so as to bathe the entire mesentery root in procaine solution. For the upper abdomen infiltration of the mesocolon down to its base was also necessary. The abdomen was thus absolutely relaxed, and a full laparotomy and intestinal suture took from 40 minutes to an hour; no ileus was observed, and since the patients were conscious their subsequent evacuation was not held up. Blood transfusions were given in many of the cases, and intravenous glucose was used postoperatively.

Local infiltration anæsthesia, often combined with a splanchnic block, is used by many surgeons, but most British surgeons also have the patient asleep. Almost every general anæsthetic carries some danger or disadvantage, but consideration of the psychological make-up of the shocked patient is an important part of treatment. The average Englishman prefers, and as a rule demands, to be unconscious for what is otherwise an ordeal to him and even to the surgeon. The great advantage of the local anæsthetic is that it permits of the lightest possible plane of narcosis; this is especially important on the battlefield where orderlies, and even the padre, have had to be coopted. In the city battle zone, cyclopropane, with which oxygen percentages of 75–90% can be given, is widely preferred as the complementary anæsthetic; it is now readily obtainable but its administration is probably best left to the skilled anæsthetist. Nitrous oxide with oxygen is usually quoted as the safest anæsthetic, and for that reason is often picked by the not so expert. But it is almost impossible to maintain unconsciousness with it without suboxygenating the patient, and in shock maintained anoxia is particularly dangerous. There may be little indication of this oxygen lack, for if there has been hæmorrhage and the hæmoglobin is below 50% *no external cyanosis will be observed.* Ether has shown the greatest safety in the greatest number of hands providing it is used for narcosis and not for relaxation. With the abdominal wall relaxed by local injection, the intravenous barbiturates have much in their favour and anæsthesia may well be started by injecting one of these into the rubber tube delivering a blood-transfusion. MALLINSON,[12] who has investigated casualty anæsthesia in the EMS, finds that with intravenous barbiturates "shock is not a contra-indication; properly administered, in fact, the reverse is outstandingly clear." Local anæsthesia has one possible disadvantage, important these days with the

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1 Lahey, F H and Marshall S F *Surg Gynec Obstet* 1939 69 498; Lahey F H *Trans Amer surg Ass* 1941 59 266
2 Davis, J *Milit Surg* 1940 15, 86
3 Storck, A H *Surg Gynec Obstet (Int Abstr Surg)* 1941 73, 303
4 Gordon Taylor G *Practitioner* 1941 147, 448
5 O'Shaughnessy L and Slome D *Brit J Surg* 1935 22 589
6 Schubeith O D *Acta chir Scand* (Suppl 43) 1936 78 10
7 Smith J *Aust N Z J Surg* 1942 11, 153
8 Massie G *Lancet* 1923, ii 643
9 Estes, W L *Surg Gynec Obstet* 1942, 74, 419
10 Vishnevskiy A V *Soviet Med* 1941, 5 10
11 Pshenichnikov V I *Ibid*, p 16
12 Mallinson, F B *Brit J Anæs* 1941 17, 92

Schools Association, have contributed much to this subject Their pamphlet The Control of Measles issued in 1913, was of great value in the struggle for sanity In addition they have revised their Code of Rules many times since its first issue in 1885, their latest (10th) edition was published in 1940 This Code was written mainly for public and preparatory schools, but it is full of information on infectious disease as a whole The official memo notes that medical officers in some urban areas recommend that the practice of allowing contacts of measles german measles and chicken pox to attend school might be extended to include those of any of the common infectious diseases of childhood except on the rare occasions when there is some special reason why an individual child should be excluded These medical officers feel that the attendance of contacts at school makes their daily supervision by the school medical and nursing staff easier and facilitates the early detection of fresh cases

POST-ARSPHENAMINE JAUNDICE

In the past eighteen months there has been a widespread impression that syphilitic treatment is too often being complicated by jaundice No figures have so far been published to substantiate this view and it would be useful if the Services would publish their experience Various factors prevent an accurate estimate of the incidence, but most of them have been operative in the past also and would not vitiate the comparison The differential diagnosis in such cases is by no means easy for in addition to liver damage by spirochætes and arsenic, the syphilitic patient is at least equally exposed to the other disease processes which may produce jaundice Infection of the liver in early syphilis is probably common but seldom shows itself clinically and tests of liver function have hitherto contributed little to the detection of subthreshold hepatic syphilis Once treatment is well established it is difficult to believe that subsequent jaundice is syphilitic in origin since the arsphenamines are stored in the liver According to Mathieu[1] 40% of the drug remains in the body seven days after intravenous injection Bulmer[2] states that more arsenic is excreted in the fæces than in the urine the bile being the main channel of excretion, and arsenic has been found in the bile 25 minutes after the intravenous injection of neoarsphenamine[3] Jaundice occasionally appears after the initial one or two injections and in such cases is probably due to a Herxheimer reaction More usually it develops after 8–12 injections and the arsphenamines are probably contributory in such cases Moreover, the incidence of jaundice developing during the treatment of syphilis has increased since the introduction of the arsenobenzene preparations, in cases treated with arsenicals the reported incidence of jaundice varies from 0 6%[4] to 5%,[5] while the extremes for untreated syphilis are 0 18%[6] and 0 37%[7] There has been no evidence to correlate cases of postarsphenamine jaundice with the use of any one arsphenamine preparation or with any particular batch of drugs In 1920, Stokes and his colleagues[8] expressed the view that the icterus was due to infectious hepatitis unrelated to syphilis or to the arsenicals and since the confirmatory epidemiological work by Ruge[9] in the German navy this view has become increasingly accepted Roholm and Iversen[10] have shown by biopsy that infectious hepatitis is a diffuse hepatitis, and Andersen[11] has demonstrated that the virus responsible is pathogenic for swine and transmissible from man to swine and from swine to swine 5 of the cases in which Roholm and Iversen performed biopsy developed jaundice during or after treatment with arsenobenzene compounds and the histological changes in the livers of these patients did not differ from those found in other cases The signs symptoms and clinical course are also similar and it is reasonable to suppose that many cases of postarsphenamine jaundice are due to virus infection the resistance of the liver having been impaired by the toxic action of the arsphenamines Epidemiological studies of infectious hepatitis[12] suggest that the disease is probably transmitted by droplet infection that the incubation period is between three and six weeks and that patients are infective early in the disease and cease to be a danger to others within a week of the onset of symptoms In view of the early infectivity and the occurrence of mild and undetected cases epidemiological control is difficult War conditions favour the spread of infectious hepatitis and localised epidemics among Service and war-factory personnel may well occur

ARCUS SENILIS

A GREY annular opacity just inside the corneal circumference, is seen in almost all elderly people Its name is unfortunate for it implies a senile change, and thus when found in those under the age of 40 as it often is, suggests prematuresenility In these younger patients it might better be termed arcus presenilis or juvenilis It never causes symptoms or interferes with vision and has roused only occasional academic interest The first histological examinations were made by Canton[13] in 1850 His findings were confirmed by Virchow in 1852 and His[14] in 1856 who found the lesion to consist of intracellular globules and considered it a fatty degeneration Since then several other views have been put forward but Rohrschneider[15] and Lowenstein[16] have now confirmed that it is a lipoid infiltration and have produced it in animals by feeding them on a cholesterol-rich diet Histologically the fatty droplets are intracellular, the smallest being in Bowman s membrane where they produce the sharp edge which, as can be seen clinically leaves a clear ring of cornea between the opacity and the corneal circumference In the deeper layer the droplets are both intracellular and extracellular and run right up to the corneal margin Clinically the arcus is of no consequence but at operation it may occasionally cause the surgeon to doubt where the cornea ends and the sclera begins Following up a statement by Rohrschneider that it is usually a sign of arteriosclerosis elsewhere in the body Rintelen[17] has carried out an investigation at the Institute of Morbid Anatomy in Basle In 600 autopsies he found that a macroscopic arcus senilis existed in 214 and that there was no sign of arteriosclerosis in 66 of these (31%) In 97 (45%) there was a moderate arteriosclerosis and in the remaining 51 (24%) it was severe In 39 all over 60 years of age there was no arcus, though 13 of these showed severe arteriosclerosis and 7 of them had died of a vascular lesion The arcus was found 4 times in patients under 50 and in none of these was there macroscopic or microscopic evidence of arteriosclerosis Since arcus senilis and arteriosclerosis both arise in elderly people, it is natural that they should often be seen together in the same patient but from Rintelen s investigations is organisms are usually unchanged Arsenical resistance of trypanosomes is apparently due to a diminished affinity of the parasite for the drug, but in the case of bacteria there is still no evidence for an explanation along these lines, and it seems probable that the phenomenon is somehow related to *p*-aminobenzoic acid Too gloomy a view should not be taken of the difficulties which sulphonamide-resistance may cause Although examples are now more often reported, the great majority of streptococcal, pneumococcal and gonococcal infections still respond to sulphonamides Some fear that all the strains of these organisms will eventually be made resistant, but acquired arsenical resistance has not yet progressed far in Africa And even if sulphonamide-resistance does eventually become widespread the recent work in Oxford[22] suggests that by then we shall have other weapons in our hand

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[1] Mathieu L *Rev med Est* 1922 50 713
[2] Bulmer F M R *J Pharmacol* 1923 21 301
[3] Obregia A and Carniol A *C R Soc biol Paris* 1915 78 468
[4] Harrison E W *Canad med Ass J* 1917 7 51
[5] Clément Simon and Vullièmez *Bull Soc franc Derm Syph* 1920 27 263
[6] Wile U J and Sams W M *Amer J med Sci* 1934 187 297
[7] Werner S *Münch med Wschr* 1897 44 736
[8] Stokes J H Ruedemann R Jun and Lemon W S *Arch intern Med* 1920 26 521
[9] Ruge H *Arch Derm Syph Wien* 1927 153 518 *Derm Wschr* 1932 94 278
[10] Roholm K and Iversen, P *Acta path microbiol scand* 1939, 16 427
[11] Andersen T T *Acta med scand* 1937 93 209 Andersen T T and Tulinius S *Ibid* 1938 95 496
[12] Newman J L *Brit med J* 1942 i 61 Pickles W N *Lancet* 1939 i 893
[13] *Lancet* 1850 i 560
[14] Normale und pathologische Anatomie der Cornea Basel 1856
[15] *Klin Mbl Augenheil* 1925 74 93 v *Graefes Arch Ophthal* 1927 118 131
[16] *Mbl Augenheil* 1936 96 765
[17] *Schweiz med Wschr* 1942 72 515

Annotations

THE NF IS DEAD

THE Ministry of Health reminds us that the National Formulary was superseded by the National War Formulary on Dec 1, 1941 Apparently some practitioners are still prescribing mixtures from the NF for their insured patients with consequent inconvenience to patient and pharmacist, and often wastage of drugs which are scarce The ministry urges doctors when prescribing medicines by title alone to use those titles included in the BP, BPC or NWF but no others

NUTRITIONAL SURVEYS IN INDIA

IT is a relief to turn from the accounts of India in the daily press and take up Memoir 34 of the *Indian Journal of Medical Research* This deals with a series of investigations carried out in India by Dr D C Wilson between 1936 and 1940 The diets of Indian communities in Kashmir, the Himalayan foothills, the Punjab, Hyderabad (Deccan), the Central Provinces and Orissa were investigated These areas were chosen partly because they were centres of considerable nutritional disease and partly because they were representative of the great rice, wheat or millet eating areas of the country The heights, weights, teeth and physical condition of thousands of Indian children in the same areas were examined at the same time Subsidiary studies were also made of the health of the inmates of various jails and of leper asylums Of the many facts of outstanding interest brought to light, one of the most arresting is that Indian children seem to be both shorter and lighter at all ages than their English or American fellows Among the Indian children themselves the Hindus tended to be both shorter and lighter than the Moslems or Sikhs One wonders whether these differences would disappear if all the diets could be equalised from birth The diets of all the poorer Indian communities fall short of the standards set up by the League of Nations, and it was found also that, as in this country, poverty is the great obstacle to an adequate diet Contrary to common belief, income rather than religion determines what an Indian shall eat An interesting point is made that localities in which wheat can be grown are also favourable for the production of other valuable foods such as milk, and it is to these rather than to the staple cereal that differences in physique are likely to be due Comparisons were made of the incidence of rickets and osteomalacia in communities with very similar diets, and the great differences are attributed to the exposure or otherwise of the body to sunlight It will be chastening to some who flatter themselves that they are hard workers to brood on the amount of travelling and trying work which the collection of these data must have involved It is pleasant also to ponder over the personal and private Anglo Indian goodwill which made it all possible Those who know anything about dietary surveys, however, will realise that the field work was only the beginning The analysis and presentation of the data, which seems to have been carried out by Miss Widdowson, PhD, must have been as great a task, though an unostentatious one

SCHOOL CLOSURE FOR INFECTIOUS DISEASE

A MEMORANDUM[1] issued jointly by the Ministry of Health and the Board of Education says in big type "The principle relating to the closure of schools enunciated in the memorandum, that it is only in special and quite exceptional circumstances necessary to close a school in the interests of public health, still holds good " After years of controversy this principle has at last been established One of the first steps towards this end was the Woolwich inquiry which was planned in 1902 to last for five years The utmost possible school closure was followed in the eastern half of the borough and class closure only in the western half After some years Dr S Davies reported that while more cases were notified in the non closure districts, closure had no appreciable effect on the age incidence and that the death rates in both districts were about equal He concluded his report in 1906 " There is no doubt that in a large proportion of cases the infection of measles is contracted at school, and brought by children attending school to the younger members of the family not attending, among whom measles is so fatal Now, obviously, if the age of school attendance were raised by one or two years the number of young children, none of whom attended school, would be increased in proportion, and a large number of young children who are now exposed to the risk of infection would be comparatively safe " Dr James Kerr says in his book Fundamentals of School Health " I have always disagreed with this doctrine " Six years later the *Lancet*,[2] speaking of the compulsory attendance of contacts at school, comments " It is incredible that any body of intelligent authorities should countenance a proceeding so fraught with danger to the entire community " Another step was taken in Birmingham, where notices were sent to parents of unprotected children to keep them at home if there was any appearance of illness This was good health propaganda C J Thomas stated in School Hygiene (1913–15) " the history of measles epidemics proves that, given a sufficiently unprotected population, measles will spread whether there be schools or whether there be none " Kerr made a similar observation on his experience of measles in Bradford, and said that the school is not the main agent in diffusion He goes even further and maintains that " all the isolation, exclusion or disinfection possible does not postpone the incidence of measles in 10% of those liable by more than five or six months " In 1919 the committee of the American Medical Association and the (USA) Bureau of Education reported that " the closure of schools is an extremely clumsy, unscientific and unsatisfactory method of controlling epidemics among school children It results not only in loss of school time and money, but it fails to control, inasmuch as infected children are at large playing in the street without restriction and therefore spreading the infection " This was twenty three years ago So at last we progress In 1923 there was an epidemic of scarlet fever in Islington which continued throughout the period of the holidays when the schools were closed, and school infection cannot therefore have played any considerable part in the dissemination of infection[3] The Medical Officers of

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[22] See *Lancet*, Aug 15, p 189

[1] Memo on Closure of and Exclusion from School H M Stationery Office Pp 2 1*d*

[2] 1912 ii 249

[3] Report of the MOH for London, 1923 p 17

Special Articles

SUPERVISION OF SICK ABSENCE IN INDUSTRY

SIR HENRY BASHFORD M D LOND, F R C P
CHIEF MEDICAL OFFICER TO THE POST OFFICE

BEFORE the war some large firms—though relatively few—had already recognised the value of employing medical advisers whole- or part-time and of keeping staff sick records Since the war many more such advisers have been employed in Government and other factories and there has been a general recognition of their value not only to employers, whether state or private, but to employed But there is probably still a residuum of suspicion among many workers and their unions and associations that these medical services are mainly of a police character, and have the object of scenting out malingerers and slackers and of bringing ill or injured employees back to work at the earliest possible moment—perhaps too early—in the interests of output or the maintenance of profits

Where departments or firms pay their employees while they are away from work owing to illness, or where they are paying compensation for accidents incurred on duty, or illness due to occupational causes it would be generally admitted that the employers have a right to their own medical adviser's opinion about the genuineness and nature of the illness and the prospects of either full recovery or ability to perform, if available some lighter form of work There may too have been managements and medical advisers with what psychologists might call a malingerer complex but few people with a wide experience of industrial sick absence and of industrial medical officers would agree either that malingering is common (in the true sense of the word *it is exceedingly rare)* or that industrial medical officers as a body are malingerer-hunters or capable of being bought by their departments firms or industries to the extent of failing to give honest medical advice Most doctors in industry are concerned to see that the staffs of all ranks under their care are as healthy and happy as possible employed in the right sort of job for their particular physical and mental abilities and working in the best conditions practicable

It has been argued that all this can be left to the employee's private or panel doctor who knows—or should know—better than anybody else his patient's particular physical and mental make-up and domestic circumstances, and who being an outside independent doctor is less likely to be biased in his estimate of his patient's working capacity There are clearly contributions that he is the best person to make but the industrial medical officer has—or should have—data not generally available to the private or panel doctor He should have accurate sick records perhaps extending over many years and including absences from work that may not, owing to their brevity, have been medically certificated He should have intra-departmental or intra-factory or intra-office knowledge, not available outside, of how a man or woman or boy or girl reacts to the work in hand and the environment, physical or personal in which it is performed And he is—or should be—in a position to secure modifications of work or environment which may make considerable difference to health and efficiency In other words he should be the supplement not the antagonist of the private or panel doctor and both should be the friends and confidants of those under their mutual care

The essential basis of supervision of sick absence is the maintenance of accurate individual sick records in such a form that they can be studied at any time by the industrial medical adviser and that the average annual sick absence per head of staff can be regularly recorded Thus an adequate picture can be obtained of the history of working capacity of any employee and of a whole department or industry The working-capacity medical history may not always be synonymous with the clinical medical history Thus many hospitals and doctors keep a follow-up, record of various groups of cases by interview or letter they learn from their patients of the presence or absence of signs or symptoms and base on this their views of the success or otherwise of some operation or form of treatment But they can seldom gain by these means such an accurate picture in terms of actual working capacity as a department, or works or industry can—or should be able to—from its own day-to-day and year-to-year sick records Such records can bring into a much truer perspective the actual effect on workaday life over a long period of some operation treatment, or real or supposed physical defect or disability Examples of this in the cases of gastric and duodenal ulcers [1] pulmonary tuberculosis [2] adolescent albuminuria,[3] *contacts with zymotic fevers* [4] and other conditions have been given in previous papers and many more long-distance, large-scale observations of this kind should be obtainable from industrial sick records The supervision of sick absence in industry should thus be capable of making essential contributions to the advance of general medicine and surgery

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It is perhaps in the great field of minor maladies—in which temperament anxiety lack of a sense of responsibility maladjustment and physical ill health meet and mingle and influence each other most—that the supervision of sick absence in industry can play its most valuable part and give an *opportunity* for preventive medicine The sick absences of two or three days, or less than a week are probably about four times as frequent as those of a week or more, although this may not—perhaps owing partly to the present form of panel certification—be reflected in the statistics of sick absence under the National Health Insurance scheme Many of these short sick absences may be due to organic causes, such as decayed teeth or septic tonsils a lack of resistance to some particular common pathogenic organism, or some form of minor chemical allergy , and the proper routine supervision of sick absence should give the industrial doctor the opportunity of suggesting an appropriate remedy But there will remain a considerable number (though a minority) in any large staff of employees with an abnormal yearly record of minor sick absences for which no obvious organic basis can be found And it is among these that the industrial doctor —provided he has sympathy and common sense and the insight that grows with experience—can be most valuable, especially to the young

Over and over again he will find some such factor as groundless anxiety, thwarted or seemingly thwarted ambition some personal antagonism real or fancied to a particular job or fellow-worker or foreman or office superior and he will be able to make an adjustment which results in an immediate and permanent alteration in the sick record Or he may find some factor of irresponsibility not of malingering in any serious sense, but of a too light-hearted taking of a day or two off for medical or semi-medical reasons Few people and especially young people, memorise their own sick records , and many when confronted with them in black and white are genuinely surprised by their extent often a complete alteration is the result If there is no change and no definite physical or psychological cause is discovered for repeated minor sick absences a kindly intimation that if the record continues as in the past the question of retirement or discharge on medical grounds will arise may have a considerable effect This was illustrated in a group of workers on whom I have previously reported [5] Over about 4 years this group of 40 people mostly young, had incurred between them 736 separate sick absences, totalling 6194 days after receiving the intimation described these 40 people during the next six months only incurred 54 days' sick absence their six-monthly average of illness dropping from 19 days a head to 1 3 It would be unfair to describe supervision of this sort as medical police-work in any vindictive sense since it was clearly of benefit not only to the departments but to the workers concerned and it may be that such supervision may prevent the development in later years of a valetudinarian outlook on life much harder to combat In any large staff, there will also probably be cases in which the real reason for continued minor illnesses is a fundamental dislike to the particular occupation In such cases, medical advice to seek some other mode of life is probably in the truest interest of the employee

In the exercise of medical supervision of sick absence, the industrial doctor will soon come to appreciate the importance of lay supervision by foremen forewomen heads well as from clinical experience it is safe to say that the possession of an arcus senilis does not mean its owner has vascular disease

VENOUS OBSTRUCTION IN VOLKMANN'S CONTRACTURE

THOSE who have held that venous obstruction is the most important factor in the production of Volkmann's ischæmic contracture have based their belief largely on a supposed special vulnerability of the communication between the superficial and deep venous systems around the elbow If as has been held the communication depends on one small venous channel lying deeply in the antecubital fossa, it is easy to visualise its complete interruption by the compression of swollen and bleeding tissues, and particularly by a subfascial hæmatoma In a series of careful anatomical studies Horwitz [1] has demonstrated the variations that can occur in the communications between the deep and superficial venous systems at the elbow He has shown that there are three distinct collateral veins or venous networks in addition to the so called communicating vein By injecting radiopaque medium (30% sodium iodide) into the upper extremity of 10 cadavers, a series of complex networks was demonstrated additional to the four communications which were large enough to be made out by gross dissection The sodium iodide injected into one of the radial or ulnar veins appeared immediately in the arm above the site of ligation Injection was practised not only with an intact venous system but also after ligation of the communicating vein just distal to its termination in the cephalic or median cubital vein, and of the brachial veins just above the site of their formation The solution, despite these obstructions immediately entered and coursed up the arm in every instance Horwitz concludes that a good collateral venous circulation normally exists in the elbow region, well protected by muscle planes and external to the confines of the antecubital fossa The anatomical basis of the venous-obstruction theory of Volkmann's contracture is thus undermined That sudden experimental venous occlusion may produce a condition resembling ischæmic contracture can perhaps be explained through a vasomotor reflex There is now sufficient evidence that trauma to an artery can produce reflex ischæmia and the otherwise inexplicable ischæmia of the white leg of venous thrombosis has also been regarded as evidence of this reflex mechanism

CHRONIC INFLAMMATION

SO CALLED chronic inflammatory tissue, of no discernible origin, is often encountered in human pathological material, and it is generally assumed that the cause—whatever it is—is extrinsic and that the agent responsible should be identifiable in the inflammatory tissue itself Pullinger and Pirie [2] have obtained evidence to suggest that non specific chronic inflammation may be intrinsic in origin and more subtle than is usually suspected and that it may persist for a long time after the visible causative agent has disappeared They made a series of implantations of sterile purified collagen from the cornea of the ox between the dermis and the panniculus carnosus of rabbits Biopsy specimens were removed at weekly intervals and a more or less continuous histological picture of the cellular reaction was so obtained The implants were rapidly surrounded by a cellular and fibrous vascular capsule which by the end of the fourth week began to fill up with large foamy macrophages accompanied by lymphocytes and plasma cells Collagen fibres had disappeared by the fifth week, but the macrophages contained fragments of material responding to collagen stains and these persisted without significant change until the end of the third month, which is as far as the investigation was carried After making allowance for minor differences between rabbit and human cytology, the general histological picture after the fourth week, when the collagen fibres disappeared, was closely comparable to that seen in human non specific inflammation Collagen is a highly resistant substance it is no more than feebly dissolved by any known proteolytic enzyme which works within the neighbourhood of neutrality Pullinger and Pirie suggest that it is the relative insolubility of the collagen that is responsible for the reaction and its persistence, and that an alteration in the physicochemical properties of the subject's own less soluble structures may in certain cases initiate it They do not think that the heterologous origin of the collagen played a significant part in the reaction though ideally a control using homologous or even autologous collagen implants would have been desirable Their paper has a bearing on skin grafting, since such grafts contain a high percentage of collagen and are often laid directly on the surface of granulation tissue

PROPHYLACTIC TETANUS ANTITOXIN

THE War Office reminds medical officers[1] that tetanus antitoxin should be given to all battle casualties even though they have had tetanus toxoid in the past or tetanus antitoxin recently It should also be given to patients suffering from any wound which seems likely to be infected with tetanus When antitoxin is given subcutaneously a maximum level in the blood is not reached for 3–4 days, whereas if it is given by deep intramuscular injection the same or a higher level is reached much more rapidly, appreciable quantities of antitoxin being demonstrable in the blood within a few hours Deep intramuscular injection—into the deltoid, the subscapular or outer quadrant of the gluteal regions—should therefore be the normal route , intravenous administration is not recommended *for prophylactic use*, because of the possibility of anaphylactic reaction The minimum dose should be 3000 units, but this should be doubled or trebled where there are very foul lacerated wounds If there is documentary evidence of active immunisation with tetanus toxoid a single dose of antitoxin is sufficient, otherwise two further doses of 3000 units should be given at weekly intervals

SURFACE FREEZING FOR DEEP PAIN

THE views of Leriche on the value of local anæsthesia in promoting recovery from simple ligamentous and muscular injuries are now widely accepted The abolition of nervous impulses from the damaged structure interrupts the vicious circle of reflex muscle spasm, vasodilatation and œdema and accelerates return to normal function Two papers in this issue describe the benefits of freezing the skin with ethyl chloride when dealing with *underlying painful lesions of soft* tissues periarticular structures or even chronic joint affections and fractures Henry describes striking relief in a variety of cases, while McIntosh and Petrie, writing from a Canadian hospital in Britain, record similar results in minor injuries, particularly around the ankle-joint, in soldiers There is no doubt that the method works, but explanations of its action are lacking Henry demon*strated by inserting a thermometer* into the thigh that the chilling does not reach deep structures, and his happy experience with a colleague's dachshund seems to rule out the element of suggestion The now established work of Kellgren [2] on pain referred diffusely from muscular and ligamentous foci seems relevant It is possible that anæsthetisation of the superficial area of reference by freezing may abolish the pain, as in the classical though disputed experiments in which referred pain of diaphragmatic origin was abolished by infiltrating the skin of the shoulder with procaine But this is another of those well-founded clinical observations which still await the elucidation of careful scientific research n the latter, though still further effort should be made n the direction of pooling

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[1] Horwitz, T *Surg Gynec Obstet* 1942 74, 871
[2] Pullinger, B D and Pirie, A *J Path Bact* 1942, 54, 341

[1] *Army med Direct Bull* July 1942 p 3
[2] Kellgren, H J *Clin Sci* 1938 3 174

Indian Medical Service—The committee asked the CMWC to make every endeavour to supply a specified number of medical officers a month to meet the demands of the IMS Compulsory powers could not be exerted to compel doctors in this country to accept service in the IMS, but the Government of India had introduced liberal concessions regarding antedate &c , for candidates in India, and it was hoped that the application of these concessions to candidates in Britain, would result in a satisfactory supply If volunteers for the IMS were not forthcoming, it would be necessary to make up deficiencies by the supply of additional RAMC officers Difficulties had arisen in regard to the service of RAMC officers with formations of the Army in India because of the reduction of the pay of such officers, when serving outside India, to British rates, but this policy had been changed and the War Office and India Office had agreed on the conditions under which the Army in India might draw to a larger extent on the RAMC

Emergency Medical Service—The committee considered that the extent and basic principles of EMS organisation should be reviewed in view of the additional functions it had acquired and the cuts in hospital staff The committee suggested that it should be possible, without running unjustifiable risks, to reduce many of the establishments and even close a number down altogether There were a considerable number of civilian mobile teams but few appeared to have been used The whole-time staff of all hospitals should be more mobile and each region should prepare schemes to secure the greatest degree of cooperation and interchangeability between the medical units of the civilian and Fighting Services

Ambulance Trains—The committee had examined the organisation for the evacuation of casualties by ambulance trains under the EMS scheme, but were of the opinion that the use of whole-time doctors for such trains, even when they were unsuitable for the Forces, was uneconomic and unjustifiable Part-time medical officers carrying out other duties near the places where trains were normally located should be used for this purpose

Current Needs of the Three Services and IMS—The requirements of the three Services and the IMS which the committee had approved for the first three months of 1942 were greater than the CMWC could hope to meet from the normal sources of supply The committee had asked for returns of the medical establishments of all civilian hospitals and medical institutions, and these showed that reduction of medical staffs was feasible in all types of hospitals, that London hospitals were more generously staffed in all categories than Provincial ones , and that a proportionately more drastic reduction was possible in mental-hospital staff The committee therefore proposed a reduction in the whole-time medical staff of non-teaching hospitals other than mental hospitals by 10% in the Provinces and 15% in London, teaching hospitals to reduce their staff by half these percentages , a reduction of 100 in the medical staffs of mental hospitals , and a restriction to 6 months of " A " appointments These proposals were incorporated in resolutions dated Nov 19 and Dec 3, 1941, and action was taken on them

Other Sources of Supply—The committee was satisfied that most of the employable alien doctors had already been absorbed into various appointments, and that it was unlikely that this source would help further in the problem of man-power

On a recent visit to the United States and Canada Surgeon Rear-Admiral Gordon-Taylor had discussed the possibilities of a further supply of doctors from those countries He thought that no more doctors would be forthcoming under the American Red Cross scheme, but that Canada might possibly make some further contributions A number of doctors from the RCAMC had been seconded to the RAMC but the committee considered that no more doctors were available from the Dominions, which already had heavy commitments for their own armed forces

The committee's suggestion of raising the age of conscription for doctors above that for the rest of the population had been partly met by the National Service (No 2) Act of Dec 18, 1941, but some time must elapse before it would produce an effective supply The committee hoped that as a result of the proclamation all doctors between 41 and 51 would be registered in one group as soon as possible , it was important that women doctors within the age-group 20–30 should be brought under the same compulsion as applied to male doctors

After scrutinising the establishments of the Public Health and School Medical Services the committee thought that by closer cooperation or otherwise these services could release more medical officers of both sexes for the Forces and passed a resolution urging the Minister of Health to consider this source of supply on Jan 7, 1942

Other possible ways of economising in personnel were brought to the committee's notice It recommended that more transport should be made available for medical officers in charge of troops so that one MO could do more work A reduction in the number of recruiting medical boards was considered, but the contribution which this could make to economy in medical personnel was thought to be negligible It did not seem that any material economy in medical man-power would result from the suggested transfer of certain EMS hospitals to the Army, but the committee approved the project because it was assured that it would be of real value to the Services in providing improved training facilities and opportunities for clinical experience

General Conclusion—The committee ended its second interim report with this conclusion

> " Our investigations have satisfied us that the Services are now fully alive to the limited resources available to meet their needs and those of the civilian population and to the consequent necessity for the utmost economy in medical man power As a result of their co operation with us the call by the Fighting Services on the resources of medical personnel during 1941 was substantially reduced We hope that our recommendations for the saving of medical manpower in civilian hospitals, and the deliberations of the Regional Committees will help to solve our problem during the next six months We are, however, convinced that *continued vigilance in the economical use of medical manpower is necessary* "

The committee hoped to submit later a separate report based on the demands of the Services for the last nine months of 1942 and on the reports of the Regional Committees

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In England Now

A Running Commentary by Peripatetic Correspondents

IT is easy to understand that if one is doing fairly well in a black market, or in some more licit but almost equally lucrative war-time occupation, certain transactions must be carried out without bothering one's bank manager Cash, under such circumstances, becomes the most desirable medium by which to conduct business But too much cash may become almost as embarrassing as an over-obese credit balance at the bank , some busybody or other might want to find out how it was come by Then the excess must be converted into some form of wealth, preferably one that is practically certain to increase in value under present conditions and is small enough to be relatively inconspicuous and even in last resort portable Diamonds and other precious stones fulfil all these conditions most satisfactorily I am always glad when I learn that these things are being eagerly bought at staggeringly high prices, for I have always had a sneaking belief that some day, somewhere —maybe in the USSR—such vast deposits of precious stones would be found that their prices could no longer be kept up artificially and he who held large numbers of them would be but little better off than one who had collected bits of coloured glass I should like to live to see that day I do not greatly mind if these people buy up all the postage stamps in the world nor do I mind if they sink their surplus cash in sable ermine or silver fox for I have great faith in the activities of the moth But when a vandal who has more cash than he cares to be found possessed of buys old and rare books as a financial speculation, then would I pray earnestly that all his gods should look at him sideways And this of offices or departments, or works managers It would probably be unwise that he should have any direct voice in their selection and thus come to be regarded by the staff as an agent of promotion , but he should certainly be given the opportunity of putting certain aspects of lay supervision to would-be candidates for the work, since it is on the qualities of a lay supervisor—his or her own health self-control, sympathy and tact—that sick-rates will largely depend An instance of how profoundly a change of lay supervision may work is shown by the average annual sick absence in days per head of the following five groups of workers all in one office

	MEN			WOMEN	
1st year	15 0	15 4	14 7	24 5	25 8
2nd year	16 7	14 1	23 5	35 1	39 8
Change of lay supervision					
3rd year	8 0	6 9	13 2	22 1	12 9
4th year	7 0	7 3	10 3	14 3	10 7

The change of lay supervision was not the only factor in this immediate reduction, but it was undoubtedly the principal one—the conversion of the office concerned into what the sailors call a happy ship

This is not to suggest that industrial medicine outside a few occupational diseases, is a separate and exotic art it is merely ordinary medicine applied inside an office, works or factory But it is work which a panel or private doctor could not reasonably be expected—or indeed have the necessary data—to do

1 Bashford, H H and Scott W L *Lancet*, 1935, ii, 710
2 — — *Ibid*, 1936 ii, 1115
3 Bashford H H *Ibid*, 1926, ii 1305
4 Scott W L *Ibid* 1937 ii 597, *Ibid* 1941 ii, 739
5 Bashford H H *Proc R Soc Med* 1938 31, 185

TWO REPORTS ON MEDICAL MAN-POWER

In January, 1941, the Committee of Enquiry on Medical Personnel known as the Robinson Committee, made some valuable recommendations on the distribution of medical man-power between the civil and fighting services and general practice[1] the last of which was that an effective organisation should be established to settle questions of priority The Ministry of Health then appointed a Medical Personnel (Priority) Committee,[2] under the chairmanship of Sir Geoffrey Shakespeare and widely representative of civil and military medicine, to investigate " what further steps can usefully be taken to secure the utmost economy in the employment of medical personnel " and to report from time to time what should be the allocation between civil and military services of the available personnel This Shakespeare Committee has now published its first two interim reports[3] many of the conclusions of which have already formed the basis of official recommendations to hospitals and others

FIRST INTERIM REPORT

When the committee issued its first interim report, on Aug 6, 1941, it had held 25 sittings and had made a personal tour of No 4 Civil Defence Region and other areas to study the arrangements made to meet Service and civilian medical needs, besides analysing the demands of the three Fighting Services for the last 6 months of 1940 and inquiring into the medical establishments of the EMS and other hospital and health services At that time the committee had received much evidence of cooperation between the Services but it reported that the degree of cooperation varied from region to region and that much more might be accomplished if the goodwill already existing expressed itself through a recognised machinery , in few areas had a concerted effort been made to ensure the most economical use of the available medical man-power, whether Service or civil It recommended that a committee should be set up in each Civil Defence Region to include senior medical officers of the Fighting Services in that region, the regional medical and hospital officers of the Ministry of Health the liaison officer for the area appointed by the Central Medical War Committee (CMWC) and a neutral chairman preferably the regional commissioner or his deputy The task of these committees would be to review the state of medical man-power in their regions from time to time with a view to preventing underemployment and overlapping their reports, after submission to the Government departments concerned, forming a basis for recommendations by the Medical Personnel Committee itself

This report stated that it would be difficult, on the basis of the age-groups for compulsory enlistment then in force, to obtain for the Fighting Services all the male civilian doctors who could be spared, because of the uneven geographical distribution of the age-groups and a relative shortage in certain areas of male doctors under 41 In addition, there were a large number of doctors of military age in hospitals whose removal would be impracticable It was possible to transfer a doctor from one salaried post to another, but the difficulties of transferring general practitioners from one practice to another were considered insuperable on account of the personal nature of their work and the financial problems involved The committee therefore suggested raising the age-limit for compulsory military service for doctors to 5 years over that for the rest of the population So as to enable the unavoidable drain on hospital staffs to be made with the least possible loss of efficiency the committee advised the Minister of Labour to use his powers under Defence Regulations to secure that whole time staff could be transferred as desired to meet a threat of invasion or in any other period of stress

Finally, the committee recommended that the medical officers of the Anti-Aircraft and Balloon Barrage Commands should be pooled and employed on a regional basis

SECOND INTERIM REPORT

In the next six months the committee held a further 24 sessions, and periodically framed resolutions on which official action was taken It issued its second interim report on Feb 11 1942 In August 1941 this report related each Fighting Service was asked to review its establishments and requirements and submit a revised estimate in the light of the economies effected as a result of the committee's recommendations These revised estimates were discussed with the Service representatives and agreement was reached on minimum requirements after considerable economies had been effected The number of doctors supplied by the CMWC to the Services in July–September left a deficit to meet Service needs for the last 3 months of 1941 The report goes on

> " We examined in detail reports of members of the committee who visited certain Service establishments and discussed this with the Service departments We also impressed on these departments the serious shortage of medical practitioners and the importance of adequate medical supervision for the civilian population The Services appreciated the position They again reconsidered their requirements and effected further economies The Royal Air Force accepted cuts amounting to about 37% on its original demands *for the last 6 months of the year , the Army* so revised their estimates that they reduced their original demands to nearly 40% , while the Navy accepted a cut of 50% on their requirements for the last 3 months of the year We carefully considered these revised requirements and made recommendations regarding the number of doctors to be supplied for the last 3 months of 1941 to each of the Fighting Services Practically all of this number were supplied to the Services by the Central Medical War Committee by *the end of 1941 , the* deficit was made up in January, 1942 "

The committee reported that considerable economies had been effected by the three Services, and that its suggestion for pooling the medical officers of the AA and BB commands had resulted in a substantial saving

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[1] See *Lancet* 1941 i 587
[2] The members of this committee were Dr J Crighton Bramwell Dr J A Brown, Dr W M Knox Sir Hugh Lett Surgeon Vice Admiral Sir Percival Nicholls Prof R M F Picken Major General R C Priest AMS Air Marshal Sir Victor Richardson Prof Sydney Smith Mr H S Souttar FRCS and Sir Charles Wilson Dr G C Anderson attended as secretary of the Central Medical War Committee and Mr S B Chrimes PhD as observer for the Ministry of Labour The secretaries were Dr *C J Donelan and Lieut Colonel J T* Robinson RAMC Sir Hugh Lett was a member in virtue of his presidency of the Royal College of Surgeons his place was taken by Sir Alfred Webb Johnson in July 1941 and the vacancy thus created was filled by the appointment of Sir Girling Ball Major General R J Blackham AMS replaced Major General Priest in October, 1941 Mr L Infield was appointed an additional secretary in August 1941
[3] H M Stationery Office pp 12, 2*d*

ANTHOCYANURIA FROM BEETROOT

SIR,—Physiological changes in the colour of the urine are apt to puzzle or mislead the practitioner and two cases due to eating beetroot may be worth recording. A man of 41 complained of feeling restless, tired and run down. He had noticed that his motions were loose and his urine pink. He denied taking any drugs but eventually remembered that he had had "rather a lot" of beetroot during the past few days. He had some puffiness of his eyelids, normal pulse and temperature, and except for bad teeth showed nothing out of the way. A fresh specimen of urine was of a pink-violet colour, acid, and contained no albumin or sugar. Guaiacum reaction negative. In view of the puffiness, the absence of albumin, and the fact that he had recently eaten pork sausages a tentative diagnosis of trichiniasis was made. This was later excluded and the diagnosis was cleared up by one of our dispensers who told me he had noticed the same coloration of his own urine after eating beetroot.

In *Chemical Methods in Clinical Medicine* (London, 1937) G. A. Harrison writes:

> "Very occasionally the ingestion of common articles of diet (beetroot, bilberries, blackberries, etc.) leads to peculiar colours of the urine. Anthocyanuria, due to ingestion of red beet, is an example. The writer observed a case in a boy of seven (with diabetes mellitus) due to beetroot. The fresh urine was acid and was orange pink. It turned canary yellow when made alkaline with sodium hydroxide, to become pink again when made acid with HCl. Spectroscopically it showed no absorption bands, and contained no red cells and no hæmoglobin. On discontinuing the beetroot the pink colour stopped, to reappear after giving beetroot again. A dilute watery extract of beetroot gave similar colour changes with alkali and acid. The pigment was not extracted from the urine by amyl alcohol."

The urine in the present cases gave the reactions described by Harrison. The colour disappeared on withholding beetroot and returned after more had been taken. In the first case puffiness of the eyelids disappeared in two days. I should add that this discoloration from beetroot does not invariably occur in normally and constantly acid urines (as I have proved on myself).

My thanks are due to Mr. B. F. Heap, MPS, for his assistance and incidentally for the diagnosis.

The Medical Branch, G.P.O. V. C. MEDVEI.

WORSER DOCTORING?

SIR,—I agree with Dr. Harvey. In a district like this, a town of 4000 inhabitants with a scattered agricultural community round it, I do not see how a doctor could begin to give 8000 potential patients even the attention they need, let alone the attention they want. I suppose it depends on the individual GP, but some of us find the constant making of decisions and giving of opinions, trivial or otherwise, pretty exhausting work. Personally I cannot cope with more than about 60 patients a day (including those who attend the surgery) with even rudimentary efficiency, and I cannot do that for very long at a stretch without getting abominably stale.

RUS ET URBS.

SIR,—Dr. Harvey is right when he suspects I am an urban practitioner, but he is wrong when he suspects that I am ignorant of rural conditions of medical practice, for I had considerable experience of rural practice as a locum tenens some 10 to 15 years ago, and am the son of a GP who for 25 years worked in probably one of the hardest rural practices of this country. Obviously medical working conditions in town and country practice are very different, and I admit that my letter was chiefly meant to apply to urban practitioners. It has been said that in urban districts there must be a minimum of one doctor for every 3000 of the population. I have proved to my own satisfaction that it is possible to give good service to at least 6000 potential patients in a town. In country districts these proportions are obviously out of the question. As Dr. Harvey points out, urban practitioners are in the large majority; therefore I maintain that in medical call-ups larger proportions of men should be recruited from towns. I understand that the German civilian population has to put up with a ration of one doctor per 15,000, and most of these German civilian doctors are no doubt elderly men who had been hoping for an easier life. Of course doctors in the Services do not have to work at the same concentration as civilian doctors, but when they are on active service they have to work very much harder. They can be compared to Civil Defence workers who do not have a very arduous existence when there are no air-raids in their district, but who have to work often for days on end in appalling conditions, with no respite, when the emergency occurs. Moreover, doctors in the Services have to sacrifice the comforts of home life which are a real help to a busy GP. In spite of Dr. Harvey's gentle protest I still feel justified in asserting that our profession as a whole is not pulling its weight. I am positive that I can put forward a scheme whereby a district, whether urban or rural, could manage comfortably with half its peace-time number of doctors.

Southall, Middlesex. G. N. FOX.

VESTED INTERESTS

SIR,—I cannot agree with W. A. G.'s remarks about the sale of practices. It is a fact that a doctor who buys a retiring practitioner's practice does actually take over a large proportion of his patients, both NHI and private. Some may come and some may go but the solid nucleus of the old practice usually remains. If it were not so, practices would not be saleable at the prices asked. It cannot therefore be true that the goodwill of a practice is mainly in the professional ability and personality of the doctor. I think habit is responsible for many remaining with the incoming practitioner. One hears so often remarks like "I've been coming to this house for 40 years"—that is, through a series of three doctors. Further, I think, patients have confidence in their old doctor's choice of a successor.

For myself I do not like the idea of buying and selling practices nor am I opposed to a state medical service. None the less it is true that in the past one has had to put down a certain sum of capital in order to ensure a certain annual income. Doctors are surely just as much entitled to compensation out of public funds as any other business would be if it lost capital and interest through its termination by government action.

E. M. K.

Infectious Disease in England and Wales

WEEK ENDED AUG. 22

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1332; whooping-cough, 1235; diphtheria, 629; paratyphoid, 8; typhoid, 15; measles (excluding rubella), 4089; pneumonia (primary or influenzal), 346; puerperal pyrexia, 172; cerebrospinal fever, 68; poliomyelitis, 19; polio-encephalitis, 2; encephalitis lethargica, 7; dysentery, 59; ophthalmia neonatorum, 86. *No case of cholera, plague or typhus fever was notified during the week.*

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Aug. 19 was 1498, including: scarlet fever, 278; diphtheria, 130; measles, 278; whooping-cough, 242; enteritis, 46; chicken-pox, 65; erysipelas, 35; mumps, 59; poliomyelitis, 2; dysentery, 30; cerebrospinal fever, 41; puerperal sepsis, 31; enteric fevers, 5; german measles, 4; malaria, 1; other diseases (non-infectious), 126; not yet diagnosed, 125.

Deaths.—In 126 great towns there were no deaths from scarlet fever or enteric fever, 3 (0) from measles, 11 (0) from whooping-cough, 20 (1) from diphtheria, 42 (5) from diarrhœa and enteritis under two years, and 7 (0) from influenza. The figures in parentheses are those for London itself.

The fatal cases of diphtheria were scattered over fifteen great towns, none reporting more than 2. There were 5 deaths from diarrhœa at Manchester, and 4 at Birmingham.

The number of stillbirths notified during the week was 199 (corresponding to a rate of 31 per thousand total births), including 20 in London.

SIR STANLEY WOODWARK has been elected master of the Worshipful Company of Barbers. He has also been re-elected for a further year to be master of the Society of Apothecaries.

be to abandon many of our activities and devote ourselves to doing nothing in particular

Thousands at His bidding speed,
And post o'er land and ocean without rest,
They also serve who only stand and wait

FRCP

PRACTITIONER AND PATHOLOGIST

SIR,—It is indeed disappointing to read your editorial statement of August 15 that when the medical student goes into practice "he soon discovers that if he wants laboratory tests done he must either call out an expensive consultant or send his patient to the outpatient department of a hospital " We have the authority of Dr Dyke that this is far from being the true position in the provinces, where in fact consultation and collaboration between practitioner and clinical pathologist does occur without the patient first having to waste time going through the OP department of a hospital I also know of at least one teaching hospital where medical students are encouraged to interest themselves in clinical pathology as distinct from merely viewing a report returned from the laboratory

Rugby R C HILL

SIR,—For some time past the pathological department of this hospital, which incidentally does the pathology for our local council, has also been open to any and every general practitioner in our district, many of whom send specimens or even bring patients direct to the pathologist We found that this was a welcome innovation to the practitioner and has been the means of giving the pathologist a clearer clinical view of the case than otherwise would have been possible A fee is charged where it is possible for the patient to pay, but inability to pay is no bar to the examination and report

J C GILBERT,
St John's Hospital, Lewisham Secretary Superintendent

SIR,—In reply to the following extract from your leading article of August 15

> "Let it be more widely recognised that the pathologist is not a technician but is as a rule a man with a wide and accurate knowledge of medicine which he is glad to put at the disposal of his clinical colleagues "

Let it be more widely recognised also that neither is the technician a pathologist, but is as a rule a man with a wide and accurate knowledge of laboratory technique and the significance of laboratory findings, which knowledge he is glad to put at the disposal of the medical profession in those hospitals where no pathologist is employed

Little Shrewley, War F GARDNER

REACTIONS TO THE REPORT

SIR,—Ultracrepidation is a most pleasant vice and during the two months that have elapsed since the publication of the Interim Report I have resisted nobly, knowing that, for one who has never been in general practice, comment is hardly seemly However, the silence of my colleagues and the reassurances of Lord Darlington have encouraged me to overcome my scruples

Few would disagree with the broad definition of the objects of medical service (Question 1, page 41), yet how is this to be achieved ? By some form of group practice with clinics or health centres, together with an extension of National Health Insurance to include dependants and enlargement of its scope by the inclusion of consultant and specialist services Before the war, general practitioners in urban areas and hospital consultants had insufficient time to look to the purely remedial aspects of their sick patients A conscientious general practitioner has told me that on an average he had only five minutes to see each patient and a hospital consultant that he had only fifteen minutes for each new outpatient, in the country the problem is a different one, for there the time spent in travelling is the major factor

It is agreed that in a medical service directed towards the achievement of positive health far more attention must be paid to the study of the environmental factors which set a disease process in train and an elucidation of these is more time-consuming than an exhibition of the clinical acumen of remedial medicine How often does a hospital patient ask to see a consultant in private, not to receive preferential treatment in hospital nor some superior brand of medicine, but in order to have an opportunity to discuss his or her problems in greater leisure and privacy than is possible in the average outpatient consulting-room ? Apart from the disadvantages to the individual patient of this rush medicine, the lack of time for the doctor to contemplate the problems of his cases, examine them leisurely and read about them, must in the end stultify the enthusiasm of any but the most resolute In medicine one's working day should at least be equally divided between routine work and thinking about it

In the report it is suggested that the provision of secretarial assistance, &c at the Health Centre would allow this needed leisure for work, naturally, properly organised working conditions would be an improvement but the real need is for a very considerable increase in the number of practitioners—at a guess an increase of 30% whereas the annual increase in registered practitioners is about 3% To achieve such an increase must involve a long-term plan of medical school expansion, &c ; but to propose the introduction of an adequate medical service both from the point of view of the people and the practitioners without an estimate of the number of practitioners required to carry it out can only lead to disappointment and a reversion to a state of affairs as bad if not worse than before, particularly when a large proportion of the profession do not realise the full implications of social medicine

It should not be thought that the institution of a whole-time salaried service (organised by the state or private enterprise) would achieve the desired result, although there are many who could work as well if not better under such an organisation, there are just as many who would rebel or become drones With regard to the administrative proposals set out in the report, the brilliant PEP broadsheet *Planning for Social Security* points out the absurdity of proposing extensions of National Health Insurance which would "become nothing more than an extraordinarily elaborate mechanism for *excluding* 10% of the total population from the panel medical services " and would perpetuate the fantastic state of affairs where a sick man may ask to be taken off "the panel " as he will receive more from unemployment relief

Oxford A H T ROBB-SMITH

"ETHISTERONE "

SIR,—I have noted with some perturbation in your issue of Aug 8 (p 174) that the General Medical Council has approved of the name ethisterone for the derivative of progesterone known as anhydro-hydroxy-progesterone pregneninolone or ethinyl-testosterone, and that its inclusion in the British Pharmacopœia is under consideration In my experience medical practitioners who have not made a special study of endocrinology are already confused by the large number of hormones and hormonal derivatives, and this confusion is increased by the number of synonyms applicable to some of these substances The addition of yet another name to a substance which already has several will not in my opinion clarify the situation, but will increase the confusion still further

A W SPENCE

PANCREATITIS AND MUMPS

SIR,—As a corollary to Mr Rodney Smith's interesting paper in your issue of Aug 22 on pancreatitis and diabetes, and in view of the fact that pancreatitis is one of the complications of mumps, it is perhaps relevant to mention the occasional association of diabetes and mumps Eight years ago I described in your columns (1934, i, 947) three cases of severe diabetes in children which came on within a few weeks of an attack of mumps and quoted five others which had been recorded In only three of these were there definite abdominal symptoms at the time of the attack of mumps Communications from other physicians have led me to suspect that the association is not as uncommon as is supposed and that it may not be fortuitous This is supported by E Gundersen's (*J infect Dis* 1927, 41, 197) observation that after epidemics of mumps there is a rise in the death-rate from severe diabetes in the young age-group

LESLIE COLE

Cambridge

multitude of committees—a prospect from which a joint consultative committee would save us

In industry one of the chief functions of the joint committees has been the attainment of maximum production, in hospitals the committees would aim at achieving the highest possible efficiency We are all alive to the tremendous demands which may soon be made on us The establishment of joint consultative committees would be the best way of discovering non-essential work and for making certain that every employee was on his toes fully conscious that he was a vital element in war service

SURGEON'S TOOLS THROUGH THE AGES

Sir Arthur Keith has remarked that a historical collection of surgical instruments is essential for an understanding of the history of surgery. Dr Thompson has had in his care the greatest collection of old and new surgical tools in Europe, including those used by Lister and a unique assemblage of gynæcological and obstetrical implements These numbered 2365 in 1925 and by 1941 had grown to about 3000 when an appalling disaster befell them A few of the instruments had been injured by water in a raid and the council of the British Institute of Surgical Technicians had undertaken the repair Before the work could be completed another raid destroyed nearly the whole of the surgical instrument museum Some 2000 were salvaged from the debris and of these 1554 specimens and a small collection of Chinese instruments were retrieved in fair condition The remainder, comprising most of the obstetric, Ismay, Heath, and Down Bros collections, were badly spoilt All the specimens, after careful examination and temporary refurbishing, were stored in waterproof metal cases given by the institute under whose direction, when happier days return, they will be renovated by the skilled craftsmen then available Meanwhile all who are interested in Dr Thompson's subject will benefit by his prescience in having provided them with a memento[1] of the collection as it was, lavishly illustrated in a way now only open to an American publisher He traces the scalpel from 3000 BC to the present time, the amputation knife from Susruta to Liston, and begins his history of the saw with a design made 5000 years ago He shows the trephine in its various stages from a piece of stone to its modern form His account of the vaginal speculum reveals the similarity of the modern specula with those of ancient Greek models, and notes that Sims's speculum was the first new basic design invented after many centuries of vaginal inspection The metal skull saw is shown as a comparatively modern tool, being attributed to surgeons of the Middle Ages The first bullet forceps is shown to date from 1562, corkscrew types of extractors having been used previously Other studies give the history of the tourniquet (the most modern of the surgical inventions described), trocars, phlebotomy instruments, and the operation table, of which a thirteenth century illustration (obviously drawn from life) is reproduced showing a patient on a laterally tilted model, lateral tilting is only a recent addition to our modern tables The first operation tables were used for the rehabilitation work of those early days It is to be hoped that Dr Thompson will expand his account while his memory of the collection belonging to the Royal College is still fresh

WAR-TIME MEDICAL EDUCATION IN CANADA

COURSES have been speeded up so that the second and subsequent years take only eight months and the ordinary rotating internship is cut down to eight months too This means that the present sixth-year group will graduate at Christmas instead of in the following fall, by which time the present fifth-year group will be finishing In this way a third (extra) batch is being turned out every two years It was a bit disconcerting at first, our correspondent writes April didn't carry with it the feeling of a new year and there was only one week's holiday between terms, students returning to find out their examination results were just in time for the next term But the speed up is proving effective without skimping training The chief difficulty has been financial, for the full fees are now needed at closer intervals with less opportunity to earn during holidays Most students expect to earn the year's fees and possibly their keep during the summer many prefer to be independent even though their parents are in a position to pay for them Now there are only two months' holiday in which to earn But the Government has sanctioned loans of $300 (£68) a year to students in their second, third and fourth years, while those in their fifth and sixth can join up and continue their studies on service pay at $1 30 (5s 10*d*) a day plus a subsistence allowance of $1 a day Graduates take internships under the same arrangement but without the subsistence allowance Much the same has happened in the States, where considerable thought has also been given to the choice between grants and loans On the whole, the feeling is against grants · a loan makes the student more aware of obligation to his university At all events, the arrangements seem to please prospective students, for the enrolment of freshmen is very great In Canada the official curriculum has been left unaltered except that in Alberta the anatomy and pharmacology courses have been simplified Many students however are getting more clinical work in their training by acting as junior interns during their last two years . This has helped to relieve the shortage of senior interns In the States it has been noticed that first and second year students know less of first-aid than does the trained layman and the subject is to be put immediately into the curriculum In the clinical courses emphasis is to be laid on tropical and war medicine

WAR AND THE DIFFICULT CHILD

PARENTS say with feeling that all children are difficult, but the children who stand out from their contemporaries in this respect just now are those who cannot fit into the social and emotional demands made upon them by a world at war it is, in fact, the situation rather than the child which is difficult Demands for some residential accommodation for such children many of whom are mentally subnormal though not actually defective, are increasing At the suggestion of the Board of Education, the Child Guidance Council have decided to open a home school[1] for boys sent by local authorities under section 80 of the Education Act, or committed to their care under the Children and Young Persons Act At present the council are seeking for a house to hold about 30 boys The Mental Health Emergency Committee are also facing this problem[2], in 1941 they published a memorandum pointing out the need for a classification of hostels, and for psychiatric supervision of difficult children The recommendations then made on classification, premises, staffing, play activities, rebilleting, and the special provisions needed by children requiring psychiatric treatment are being followed up in a growing number of areas, and plans are being made for children to receive psychiatric treatment either from psychiatrists visiting the hostels or at clinics in the neighbourhood Wherever psychiatric social workers are available they make any necessary plans for the rebilleting or supervision of such children Last January the committee conferred on the problems created in hostels by subnormal children who needed long and special training Representatives of the Ministry of Health and the Board of Education attended, and it was decided that in each region small hostels near schools able to cater for such children might be set aside for them Part of a generous gift from the British War Relief Society in the United States was used to provide extra play equipment for hostels, and some was set aside to equip a limited number of hostels where child guidance facilities were available Twenty applications from such hostels for sums ranging from £70 to £140 were met The evidence so far collected by the Emergency Committee confirms the earlier impression that the number of children—or of adults, too for that matter—showing nervous disorders as a result of terrifying incidents is relatively small, even among those who had previously been under treatment Cases due to changed circumstances arising out of the war though rather more

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[1] History and Evolution of Surgical Instruments C J S Thompson M B E Ph D hon. curator historical collection of the museum of the Royal College of Surgeons of England New Y chuman Pp 113

[1] Annual Report of the Central Association for Mental Welfare for 1941

[2] Second Annual Report, 1941–42

Obituary

JOHN MACPHERSON

KT, CB, MD EDIN, FRCPE

Sir John Macpherson, who died on Aug 14 at the age of 84, was a commissioner in lunacy for Scotland during the first twenty years of this century His wisdom and foresight was largely responsible for the initiation and framing of the Mental Deficiency and Lunacy (Scotland) Act in 1913, and it was thanks to his tactful dealing with men and matters that it was accomplished with so little friction He was born at Dores, near Inverness, the son of the Rev Allan Macpherson, and after graduating from the University of Edinburgh in 1882 he assisted Clouston at the Royal Edinburgh Asylum His quality was early appreciated, and in 1889 he was appointed superintendent of the Stirling District Asylum at Larbert Here the building and equipment of a modern hospital block and a pathological department gave him his opportunity as an administrator, and his appointment as lecturer in mental disease at the Edinburgh Royal Colleges also won him recognition as a teacher He was appointed commissioner in 1899, and of his work at the board a colleague writes

"Sir John was profoundly interested in the boarding-out of mental patients, which gives the patient a share in family life under kindly and understanding guardianship Although the supervision of these cases was the duty of his junior colleagues, he often found time to visit them I think he liked best of all to escape to his beloved Inverness, where many patients were placed in the homes of the kindly highland people in the crofts around, and for years after, on my visits to that district, patients, guardians and public officials alike would speak of him almost with reverence He had many calls on his time and did a good deal of public speaking, for he always attracted a large and appreciative audience He breathed a spirit of optimism as to the future of psychiatry and was a powerful advocate of early treatment It was an inspiration to accompany him on visits to mental hospitals, when the interests and wellbeing of the patients were always in his thoughts Behind Sir John's charm of personality there lay singleness of purpose, breadth of vision, balanced judgment and an outstanding intellect which was not confined to his own specialty"

Macpherson's retirement in 1921 proved to be another beginning, for a series of lectures which he delivered in Sydney the following year led to the founding of a chair of psychiatry at the university there of which he was persuaded to become the first occupant Five years later he returned to this country and finally settled at Cleeve in Somerset He leaves his widow, a sister of Sir David Wallace, FRCSE, with two daughters

DAVID LURIE

B M OXFD, F R C S, LIEUT-COLONEL SAMC

David Lurie was a brilliant student He took first place in all South Africa in the matriculation examination and graduated MA with distinction from Cape Town University He came to Oxford with a Rhodes scholarship and later won an entrance scholarship to Guy's where, perhaps because things came easily to him, he did not seem to take his clinical work too seriously Yet he qualified in the usual time and took his BM in 1926 After holding some surgical appointments he proceeded to the fellowship in 1932, and shortly afterwards returned to Johannesburg where he was appointed first registrar and later assistant surgeon at the General Hospital, and a teacher in the University of Witwatersrand He joined the South African Army Medical Corps last year and had lately opened a new hospital when he was killed in a motor accident in Egypt Though always quiet and reserved Lurie was a good companion, and he was a fine tennis and table-tennis player Through his death South Africa has lost one of her best surgeons

Colonel Tudor Germain Lavie, late RAMC (retd), who died on July 1 at the age of 80, was educated at Cheltenham College and St George's Hospital He took the Scottish and English conjoint examinations in 1884 and two years later received his commission as surgeon He served as surgeon-major during the South African war, taking part in the action at Karee Siding He was wounded early in the attack on Colonel Kekewich's column at Moedwell but he continued at his duties for many hours and was commended in dispatches He retired in 1919 with the rank of colonel Colonel Lavie married a sister of Major-General W H S Nickerson, VC, AMS

Notes and News

HOSPITAL JOINT CONSULTATIVE COMMITTEES

John R Griffith, AHOA

HOUSE GOVERNOR TO THE PRINCESS BEATRICE HOSPITAL

The principle of "consultations with the staff" has always been an accepted part of efficient hospital administration J E Stone,[1] for example, recommends monthly meetings of senior departmental officers as the best method of ensuring a regular interchange of views from all sections of the hospital staff, in voluntary hospitals the management looks to the medical staff for advice and suggestions on medical questions, and a special committee invariably exists for the purpose, a further extension of this idea is implicit in the recent recommendation of the British Hospitals Association that nurses' councils should be established to discuss and advise on nursing subjects Even where no machinery exists for periodical staff meetings, administrators often hold discussions with different members of the staff and it is generally realised that in the management of such a complex organism as a hospital much value is to be derived from drawing on the experience and knowledge of a wide variety of people

How often in wards and offices of hospitals can allusions be heard to the unsuitability of an item of equipment or the inadequacy of a new extension, which, in the view of the person speaking, could have been avoided if staff had been consulted prior to installation? Occasionally such complaints have little foundation but they are sometimes justified, permanent inconvenience and reduced efficiency has resulted in hospitals from plans completed without reference to the people who are to put them into practice Even the most humble member of the staff can make valuable suggestions for the improved working of the hospital or more economic running of his department if encouraged to do so War time needs have revealed how limited has been the application of this principle of consultations with the staff in the past Financial stress, staff shortage, fire watching and other special duties, dislocation of service in bombed hospitals and difficulties associated with rationing—these and many like problems might be solved more easily and effectively if hospital managements could obtain the cooperation of every member of the staff A somewhat similar position arose five or six months ago in industry and there the complexities of the situation were largely met by the setting-up of joint production committees These committees, consisting of representatives of the management and employees, meet and thrash out questions of production in ways which seem to be producing the goods Analogous joint committees in hospitals might bridge the gap which occasionally exists between management and staff, and generate suggestions for increased efficiency of hospital work

In every hospital a committee of this kind could be formed, consisting of representatives of the management (e g, the chairman of the hospital committee, the superintendent, the matron, and, in local authority hospitals, the steward) with members elected by the staff—medical, nursing (all grades), administrative, technical, maintenance and domestic Such a joint consultative committee would bring together the numerous hospital departments while making unnecessary the existence of several bodies representing different sections of the staff The recommendation of the BHA regarding nurses' councils will lead other groups of the staff to propose councils to advise on questions affecting their work, and if we are not careful we shall be overwhelmed by a when ampoules of the unneutralised S-methylisothiourea sulphate are opened, the odour is detectable in the atmosphere in a concentration of about 1 part in 10^{4} We were unable to detect the presence of mercaptans chemically Some ampoules were tested after six months and were apparently unaltered Because of its acidity this solution is irritant when injected subcutaneously, and up to the present we have only used it intravenously, or, in other investigations, by mouth We are now conducting observations with a solution adjusted to pH 6, with the object of discovering whether injections may be given intramuscularly

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[1] Hospital Organisation and Management, London, 1939, p 292

Our practice of allowing the blood-pressure to fall before the administration of the pressor agent is obviously not to be employed as a routine, for when the blood-pressure has fallen there may be difficulty with intravenous injections if the veins become collapsed and empty In some cases this was obviated by arranging a slow intravenous drip at the beginning of the operation, and the additional control over the blood-pressure thus secured proved this a valuable feature in facilitating prompt injection

In a preliminary note[1] the trial of this substance in shock following injury has been advocated in cases where restoration of the blood-volume has not proved effective, or where circumstances are likely to delay such restoration We feel that the demonstration of its action in circulatory shock induced by spinal anæsthesia provides evidence that the substance is worthy of further trial in such cases But we would reiterate our view that it is not to be employed as a substitute for the restoration of diminished blood-volume when this is a practical procedure

SUMMARY

S-methylisothiourea sulphate raises the blood-pressure when this has been depressed by spinal anæsthesia

A further clinical trial of this substance appears warranted

We wish to thank Mr F Gordon Bell and Mr J A Jenkins, surgeons to the Dunedin Hospital, and Dr Marion Whyte and Dr J R Ritchie, anæsthetists, for their coöperation We are indebted to Prof E F D'Ath for his help in the preservation of sterile solutions of the substance

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THE LOW-PRESSURE PHASE OF BLAST

A L LATNER M SC LOND, M B LPOOL, D I C, A R C S
LIEUTENANT RAMC, ASSISTANT LECTURER DEPARTMENT OF PHYSIOLOGY UNIVERSITY OF LIVERPOOL

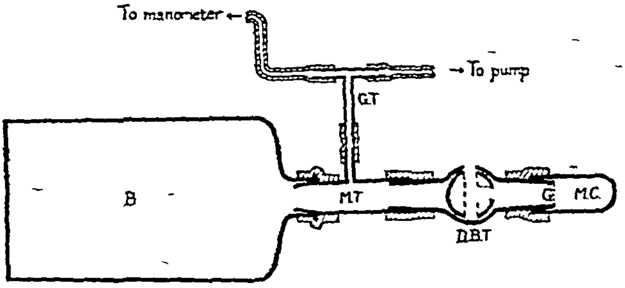
PREVIOUS investigators have attached much significance to the high-pressure component of the blast wave as the cause of blast lesions (Zuckerman 1940) The low-pressure phase has been somewhat neglected, and has not been regarded as a factor which can be primarily responsible for the production of lesions Zuckerman, however, has suggested that this phase may aggravate the injuries already produced by the high-pressure component The present experiments were carried out to determine the effects, if any, of exposure to low pressures of exceedingly short duration Mice were used as experimental animals

EXPERIMENTAL PROCEDURE AND FINDINGS

The apparatus used is illustrated in the figure The mouse was placed in the thick-walled glass mouse chamber, MC, which was then connected to the tap DBT by means of a thick rubber connexion The wide three-way bore of the tap was initially in the position indicated in the diagram by interrupted lines The mouse was therefore breathing room air Bottle B was evacuated as completely as possible by means of the 'Hi-vac' pump, which was kept running throughout the experiment Tap DBT was now rapidly turned through 90°, in a clockwise direction, and then just as rapidly returned to its original position This momentarily placed the small mouse chamber in communication with the large evacuated bottle and then returned it to its original connexion with room air The gauze G prevented the mouse from being sucked into the tap

Death occurred instantaneously or after a short interval in approximately half the animals exposed in this manner Post-mortem examination of the lungs always revealed hæmorrhagic areas, which were not as a rule symmetrically distributed Occasionally, other hæmorrhagic lesions, both intra- and extra-thoracic, were produced Such lesions have been found in the pericardium, thymus, liver, large intestine, pancreas and fallopian tubes They illustrate the fact that extrathoracic lesions produced by blast cannot be brought forward as evidence in favour of the high-pressure component being the injurious factor

The following three descriptions of fatalities give a more or less complete picture of the different types of fatal reaction observed



Experimental apparatus used B, Glass bottle of 8 litres capacity DBT metal tap (Douglas bag type) G, gauze protection, GT, glass T-piece, MC, glass mouse-chamber, MT, metal T-piece

ANIMAL 8—Death instantaneous *Autopsy* The lungs showed numerous hæmorrhagic areas, not symmetrical in their distribution, some of these areas appeared to be along the lines of ribs Blood stained froth was present in the trachea and bronchi There were a few small subserous hæmorrhages in the large intestine

ANIMAL 18—Death instantaneous *Autopsy* The typical lung lesions were present as well as hæmorrhages into the pericardium and thymus Extrathoracic hæmorrhages were also present in the liver, pancreas, pyloric region and large intestine The cæcum was greatly distended with blood The mesentery seemed abnormally congested

ANIMAL 9—Death after a few minutes, preceded by paralysis of the hind limbs, tachypnœa and orthopnœa, the appearance of blood stained froth at the mouth and nose, and finally convulsions *Autopsy* Patchy hæmorrhages in the lungs and blood stained froth in the trachea and bronchi Intercostal hæmorrhages were also present Small subserous hæmorrhages were seen in the pyloric stomach and a few in the large intestine

As in the case of true blast, the lung hæmorrhages, associated with instantaneous or rapid death, vary very much from animal to animal They tended to be greatest in those animals which survived for a short period In one case, in which death occurred after twenty minutes, the lungs were almost completely hepatised

Animals which recovered completely were killed with coal gas at varying intervals after exposure In this way the recovery process could be studied It was found to be more or less identical with previous descriptions, even to the occurrence of greyish patches in the midst of hæmorrhagic areas, described in human cases (Hadfield 1941) These areas showed pseudopneumonic mononuclear infiltration In sections stained with hæmatoxylin and eosin collapse of the alveoli rather clouded this picture The mononuclear infiltration was, however, beautifully demonstrated by using McGregor's azan-carmine stain (McGregor 1929) These animals which recovered often showed lesions which were unilateral or affected only one or two lobes This illustrates the danger of inferring that the occurrence of unilateral lesions, in animals exposed to the blast of explosions, indicates that blast lesions are necessarily produced by the high-pressure phase

DISCUSSION

Exposure to a rapidly produced low pressure of very short duration is thus capable of producing injuries similar to those produced by blast One may infer from this that the low-pressure phase of blast may possibly of the substance injected, an expression of caution in the administration of a new drug In most of the instances where the blood-pressure subsequently fell to any considerable degree this was the result of operative trauma, and further injections were necessary (fig 2) The response to the later injections was never as well-marked as that following the first injection, but some response was always obtained In a few cases, where severe operative procedures were in progress, intravenous saline or blood-transfusion was required at a later stage, but not before the pressure had first been elevated and maintained for a considerable period by S-methylisothiourea sulphate alone

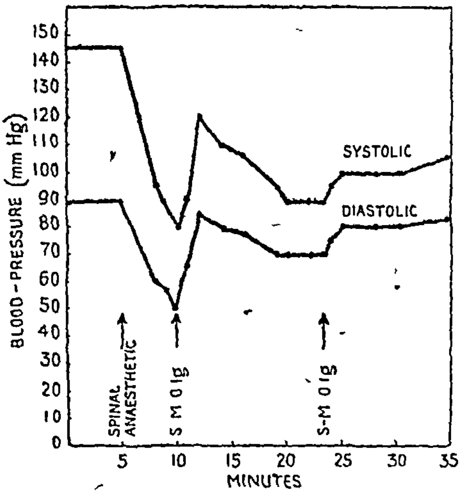


Fig 2—Response of blood pressure to repeated intra venous injections of 0 1 g of S-methylisothiourea

Although most of these cases received less than 0 25 g, it is possible in the absence of excessive slowing of the heart to give 0 5 g within a few hours, or 1 g in twelve hours, as was done in case 1, and in other unpublished cases of shock arising from different causes Experiments in animals suggest that still larger doses may be employed, but we have no experience of them in man, and in general it seems that when moderate doses fail to elevate the blood-pressure because of adverse circulatory conditions larger doses will be ineffective also Injection should always be made slowly, over a period of half to one minute, for an occasional patient has suffered slight distress when the substance has been given rapidly, but this has not occurred in the same patient when the injection was given slowly

DISCUSSION

This study was planned to determine the effect of S-methylisothiourea sulphate on the blood-pressure of patients under high spinal anæsthesia The technique employed was not the most satisfactory for routine use, since, *in order to demonstrate the effect of the substance*, the blood-pressure was allowed to fall before the injection was given The elaboration of a suitable technique was not, however, our immediate concern, but we can state that in every case in which S-methylisothiourea sulphate was employed the blood-pressure was raised (fig 3) In some instances it rose by as much as 65 mm Hg, and in 18 out of 20 cases it rose 20 mm or more It should be noted that as a rule the drug was given while the pressure was still falling, either as a result of the spinal anæsthetic or through handling of the abdominal viscera For this reason the rises in pressure recorded are certainly less than the full pharmacological effect which would have been registered had the full extent of the fall from spinal anæsthesia been attained before the pressor drug was given, or if the factor of operative trauma had been absent

It had previously been noted in animal experiments and in man (Nassif and Smirk, unpublished observations), that the rise in blood-pressure was often accompanied by slowing of the pulse, and slowing was noted in this series of cases This fall in heart-rate was usually slight, but in three cases there was a drop to about 50 beats per min, and in two to 40 beats Great slowing may set a limit to the amount of the drug which may be injected at any one time We intend to ascertain whether this slowing may be partly counteracted by atropine, thus permitting further administration of the substance

In view of the fact that substances such as ephedrine and lævo-α-hydroxy-β-methylamino-3-hydroxyethylbenzene hydrochloride ('Neosynephrine') are commonly employed in spinal anæsthesia, it was desirable to know if any incompatibility existed between these substances and S-methylisothiourea sulphate It has been demonstrated (Fastier and Smirk, unpublished observations) that the administration of S-methylisothiourea sulphate in the cat and dog renders these animals more sensitive to the pressor action of adrenaline On account of its practical and theoretical interest, therefore, *the effect of* S-methylisothiourea sulphate on the pressor action of other sympathomimetic amines was studied It was found that this substance and neosynephrine acted synergistically in respect of their pressor activities, and that a lesser degree of synergism also existed between it and ephedrine In a few instances our clinical observations suggest *the possibility that in man also the* combined effect of S-methylisothiourea sulphate with either neosynephrine or ephedrine is greater than the sum of their separate effects It seems, therefore, that this substance deserves further consideration as a pressor agent, to be held in reserve for use in cases where the administration of ephedrine or neosynephrine has given an inadequate response, and particularly if the synergism observed in animals and in our preliminary observations in man is confirmed So far as our observations go it appears that S-methylisothiourea sulphate would also deserve a trial as a routine pressor agent if the difficulties attendant on its intravenous administration were overcome

As our experience is limited to 20 cases, we cannot express any opinion as to its merits when compared with ephedrine or neosynephrine, and it must be fully recognised that the use of the drug is at present in an experimental stage Our limited clinical experience is unlikely to have brought us in contact with all its potential risks We have evidence from other work that it is unsuitable in congestive heart-failure, and we have, on theoretical grounds, avoided its use also in cases of coronary disease, hypertension and thyrotoxicosis Experiments in animals suggest that it is a safe substance, and experience in about 100 patients and normal subjects has not provided us as yet with any evidence against this, except in congestive heart-failure, where 2 patients experienced breathlessness of a few hours' duration after its use Quantities of as much as 0 8 g have been taken by mouth on several occasions by normal subjects (Nassif and Smirk, unpublished observations) without ill effect or the development of any symptoms

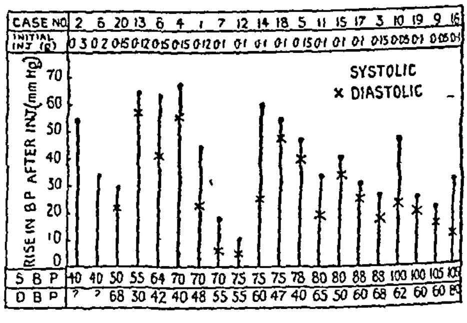


Fig 3—Synopsis of blood pressure responses to initial intra venous injection of S methylisothiourea

Since we do not intend to go further with the detailed study of *the technique in spinal anæsthesia*, we present for what they are worth a few preliminary ideas which may be of service to anyone who desires to make a practical trial of the substance S methylisothiourea sulphate is a relatively simple substance, which may be prepared readily in the laboratory and can be purchased commercially[3] We do not know anything concerning *the purity of commercial samples* We have employed the substance in a 10% aqueous solution placed in ampoules of 2 ml, each, which were sterilised by tyndallisation This solution is definitely acid and apparently does not decompose to any appreciable extent If, however, the solution is rendered alkaline it begins to decompose at a pH of about 9, liberating the powerfully smelling substance methyl mercaptan An odour somewhat similar to that of methyl mercaptan is noticed when ampoules of the unneutralised S-methylisothiourea sulphate are opened, the odour is detectable in the atmosphere in a concentration of about 1 part in 10^{14} We were unable to detect the presence of mercaptans chemically Some ampoules were tested after six months and were apparently unaltered Because of its acidity this solution is irritant when injected subcutaneously, and up to the present we have only used it intravenously, or, in other investigations, by mouth We are now conducting observations with a solution adjusted to pH 6, with the object of discovering whether injections may be given intramuscularly

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[3] It can be obtained in Great Britain from Messrs British Drug Houses

Our practice of allowing the blood-pressure to fall before the administration of the pressor agent is obviously not to be employed as a routine, for when the blood-pressure has fallen there may be difficulty with intravenous injections if the veins become collapsed and empty In some cases this was obviated by arranging a slow intravenous drip at the beginning of the operation, and the additional control over the blood-pressure thus secured proved this a valuable feature in facilitating prompt injection

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S-methylisothiourea sulphate raises the blood-pressure when this has been depressed by spinal anæsthesia

A further clinical trial of this substance appears warranted

We wish to thank Mr F Gordon Bell and Mr J A Jenkins, surgeons to the Dunedin Hospital, and Dr Marion Whyte and Dr J R Ritchie, anæsthetists, for their cooperation We are indebted to Prof E F D'Ath for his help in the preservation of sterile solutions of the substance

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THE LOW-PRESSURE PHASE OF BLAST

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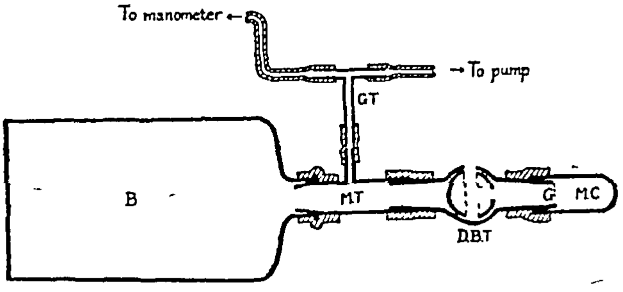
PREVIOUS investigators have attached much significance to the high-pressure component of the blast wave as the cause of blast lesions (Zuckerman 1940) The low-pressure phase has been somewhat neglected, and has not been regarded as a factor which can be primarily responsible for the production of lesions Zuckerman, however, has suggested that this phase may aggravate the injuries already produced by the high-pressure component The present experiments were carried out to determine the effects, if any, of exposure to low pressures of exceedingly short duration Mice were used as experimental animals

EXPERIMENTAL PROCEDURE AND FINDINGS

The apparatus used is illustrated in the figure The mouse was placed in the thick-walled glass mouse chamber, MC, which was then connected to the tap DBT by means of a thick rubber connexion The wide three-way bore of the tap was initially in the position indicated in the diagram by interrupted lines The mouse was therefore breathing room air Bottle B was evacuated as completely as possible by means of the 'Hi-vac' pump, which was kept running throughout the experiment Tap DBT was now rapidly turned through 90°, in a clockwise direction, and then just as rapidly returned to its original position This momentarily placed the small mouse chamber in communication with the large evacuated bottle and then returned it to its original connexion with room air The gauze G prevented the mouse from being sucked into the tap

Death occurred instantaneously, or after a short interval, in approximately half the animals exposed in this manner Post-mortem examination of the lungs always revealed hæmorrhagic areas, which were not as a rule symmetrically distributed Occasionally, other hæmorrhagic lesions, both intra- and extra-thoracic, were produced Such lesions have been found in the pericardium, thymus, liver, large intestine, pancreas and fallopian tubes They illustrate the fact that extrathoracic lesions produced by blast cannot be brought forward as evidence in favour of the high-pressure component being the injurious factor

The following three descriptions of fatalities give a more or less complete picture of the different types of fatal reaction observed



Experimental apparatus used B, Glass bottle of 8 litres capacity DBT metal tap (Douglas bag type) G, gauze protection, GT, glass T-piece, MC, glass mouse-chamber, MT, metal T piece

ANIMAL 8—Death instantaneous *Autopsy* The lungs showed numerous hæmorrhagic areas, not symmetrical in their distribution, some of these areas appeared to be along the lines of ribs Blood stained froth was present in the trachea and bronchi There were a few small subserous hæmorrhages in the large intestine

ANIMAL 18—Death instantaneous *Autopsy* The typical lung lesions were present as well as hæmorrhages into the pericardium and thymus Extrathoracic hæmorrhages were also present in the liver, pancreas, pyloric region and large intestine The cæcum was greatly distended with blood The mesentery seemed abnormally congested

ANIMAL 9—Death after a few minutes, preceded by paralysis of the hind limbs, tachypnœa and orthopnœa, the appearance of blood stained froth at the mouth and nose, and finally convulsions *Autopsy* Patchy hæmorrhages in the lungs and blood stained froth in the trachea and bronchi Intercostal hæmorrhages were also present Small subserous hæmorrhages were seen in the pyloric stomach and a few in the large intestine

As in the case of true blast, the lung hæmorrhages, associated with instantaneous or rapid death, vary very much from animal to animal They tended to be greatest in those animals which survived for a short period In one case, in which death occurred after twenty minutes, the lungs were almost completely hepatised

Animals which recovered completely were killed with coal gas at varying intervals after exposure In this way the recovery process could be studied It was found to be more or less identical with previous descriptions, even to the occurrence of greyish patches in the midst of hæmorrhagic areas, described in human cases (Hadfield 1941) These areas showed pseudopneumonic mononuclear infiltration In sections stained with hæmatoxylin and eosin collapse of the alveoli rather clouded this picture The mononuclear infiltration was, however, beautifully demonstrated by using McGregor's azan-carmine stain (McGregor 1929) These animals which recovered often showed lesions which were unilateral or affected only one or two lobes This illustrates the danger of inferring that the occurrence of unilateral lesions, in animals exposed to the blast of explosions, indicates that blast lesions are necessarily produced by the high-pressure phase

DISCUSSION

Exposure to a rapidly produced low pressure of very short duration is thus capable of producing injuries similar to those produced by blast One may infer from this that the low-pressure phase of blast may possibly have an importance greater than that previously attributed to it It may be argued that the period of exposure to low pressures in these experiments has been greater than in true blast In order to overcome this criticism an apparatus has been devised in which mice can be exposed to known pressures, high or low, for measurable periods corresponding to those of blast Nevertheless, it is felt that even with the present apparatus the period of exposure to low pressures is exceedingly short and probably of the same order as that of blast

What is the mechanism whereby this short exposure to low pressure produces lesions ? In this communication the lung lesions only will be considered Blast injuries of the lungs bear some resemblance to the injuries that occasionally occur with the Davis escape apparatus The submarine fatalities are known to be caused by over-inflation due to the fact that the pressure of air in the lungs is greater than that of the surrounding atmosphere In the case of blast such a pressure difference might be achieved in two ways One possibility is that the lungs are over-inflated by the high-pressure component passing directly down the bronchial tree That this does not occur is adequately demonstrated by the findings of Zuckerman and his co-workers (1942) The second possibility is rather more subtle It depends on the assumption that the pressure changes of blast are not directly communicated to the inside of the lung This is borne out by the relative narrowness of the trachea and the exceedingly short duration of the blast wave If this state of affairs holds good, then the intrapulmonary pressure would be greater than the outside pressure during the low-pressure phase of blast The large area of body surface would make this pressure difference very effective The resulting over-inflation of the lungs would tear some of the pulmonary capillaries and so produce the hæmorrhagic lesions, hence the lesions of the experiments just described

The lung bleeding of blast injuries continues for quite long periods This can be explained by a similar mechanism of tearing of the capillaries In this case, not by pressure differences but by the lung movements causing a pull on the fibrin strands produced by coagulation and early organisation This suggestion obviously has an important bearing on treatment One might suggest immobilising the chest with bandage as well as the inhalation of pure oxygen

It seems possible that the lung lesions of blast are primarily due to over-stretching of the lung substance (1) during the low-pressure phase, by the mechanism already indicated, and (2) at the end of the high-pressure phase, by the elastic recoil of the thoracic wall occurring after compression These factors would tend to be additive As far as can be ascertained from published work this suggestion has not previously been made It would indicate a method of preventing blast injuries of the lung Over-inflation should not occur if the chest is covered with a tight inelastic bandage or jacket

SUMMARY

Mice have been exposed to sudden low pressures of short duration

Approximately half the animals died instantly or within a short period

Typical blast lesions were produced, both intra- and extra-thoracic

In the treatment of blast injuries of the lung immobilisation of the chest with a bandage might prevent further bleeding into the lung

Covering the chest with a tight bandage or jacket should help to prevent blast injury by checking over-stretching of the lung substance

I wish to thank Prof H E Roaf, in whose department this work is being carried out, as well as Prof T B Davie and Dr C V Harrison, of the department of pathology, for criticism and advice

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REACTION OF THE BLOOD LYMPHOCYTES TO TRAUMA AND HEALING

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IT was recorded by Erf (1940) that when the stomach, intestines, spleen, pancreas and mesenteric lymph nodes were removed from rabbits a severe and persistent lymphopenia developed within 2 hours of the operation and was not relieved by the administration of lymphocytes intravenously After the operation the rabbits recovered from the anæsthetic and were able to hop about, they lived from 8 to 24 hours These experiments were carried out to test the suggestion by Bunting and Huston (1921) that lymphocytes escaped from the circulation by migrating through the mucous membrane of the alimentary canal Erf's results did not support the idea that such migration took place, though it has since been confirmed (Sanders, Florey and Barnes 1940) that very large numbers of lymphocytes must disappear from the circulation daily On the contrary Erf's results suggest that the gut, spleen and mesenteric nodes are the main source of the blood lymphocytes

Yoffey (1942), also testing the suggestion of Bunting and Huston, removed the greater part of the small and large intestines in 15 dogs Within 2–3 hours there was no constant change in the blood lymphocytes Of the 15 dogs, 6 showed a fall in their lymphocytes, 6 a rise and 3 no change There was always a considerable increase in the polymorphonuclears, and the red cells showed little change Sanders, Florey and Barnes (1940) noted that the blood picture was considerably altered by operations other than removal of the gut They gave the following figures for the changes in the blood lymphocytes produced by drastic operative procedures on cats

Operation	*Lymphos per c mm of blood* *Before op*	*6 hr later*
Decerebration with exposure of colon	7200 6600	810 1100
Decapitation and collection of intestinal secretions	5100 6300	2200 4800

The following experiments were carried out on albino rats, using the counting methods described elsewhere (Cruickshank 1941)

Removal of the stomach, small intestine, colon, mesenteric lymph-nodes and spleen —The operation was performed under 'Nembutal' and ether, after it the rat was always kept quiet with nembutal until it died Effects on the blood lymphocytes are shown in table I (rats 1–5) All showed a considerable fall in their blood lymphocytes There were no notable changes in the red cell counts The results of removing parts of the alimentary canal are shown in the same table (rats 6–12) All these animals showed a diminution of lymphocytes at some stage of the experiment It will be noted that in some, towards the end of the experiment, there was a tendency for the lymphocytes to rise again This was conspicuous in rat 10 where there was only a slight fall followed by a fairly decided rise

It was usually found that the fall of the lymphocytes was gradual and reached a maximum in about 24 hours Immediately after the operation there was little change in the lymphocytes as can be seen from the two following experimental operations

Rat A
Immediately before gastrectomy, 8064 lymphocytes per c mm
" after " 8171 " " "

Rat B
Immediately before gastrectomy 8102 lymphocytes per c mm
" after " 8060 " " "

Anæsthesia alone caused no fall

Operations unconnected with the alimentary canal —All the experiments so far had had some connexion with the alimentary canal (even those of Sanders, Florey and Barnes) The results obtained after decerebration in rat 13 and after wounds of the skin (made by the method of Young, Fisher and Young 1941) in rabbits 1, 2 and 3 are shown in table I In rabbit 3 the lymphocytes were found to be higher the day after the operation than they had been originally, but in all the other experiments there was a fall

TABLE I—LEUCOCYTES PER C MM BEFORE AND AFTER OPERATIONS IN ANIMALS

Animal	Operation	Before opn Lymph	Before opn Poly	After opn Time since opn (hr)	After opn Lymph	After opn Poly
Rat 1	Removal of gastro intestinal canal	7354	912*	5	1063	2037
2		9418	1332†	3	1774	786
3		6470	1584*	5½	3057	4795
4		9211	1041†	1	5256	2744
				2½	3689	4111
5		7070	2058†	6	467	3333
				10	942	2458
Rat 6	Gastrectomy	14,795	2153	5	9788	13,912
				12	5899	19,731
				14	8364	14,676
7	Enterectomy	8887	2853	1	12 264	4536
				6	11 915	5685
				12	7186	10,214
				14	7667	11,033
8	Colectomy	7416	2884	7	6963	14,797
				12	5995	15,965
9	Gastrectomy	7843	2530*	8	4545	11,515
				21	1353	10 947
				24	1632	7968
10	Entero-colectomy	7366	3954*	6	6184	10,666
				11	8258	18,642
				20	9625	21,125
				24	10 952	23 598
11	Gastrectomy	7069	1784*	7	7035	13,065
				11	4421	11 376
				13	2246	6394
				20	3876	6244
				24	2458	3642
12	Entero-colectomy	8593	3227	6	4426	11 376
				21	612	2448
				24	952	2448
Rat 13	Decerebration	8080	1240	1	9397	3353
				5½	5060	5060
				12	4129	7771
				23	5037	5843
				27	3658	6502
Rabbit 1	Skin wounds	9319	2954	24	5505	845
2	,, ,,	2925	1499	24	2760	680
3	,, ,,	5098	2662	24	7165	1365

* Average of 3 counts † Average of 4 counts

Human observations —Patients who underwent various operations were then investigated and the effects of their operations on their blood lymphocytes are shown in table II Of the 27 cases, 22 showed some fall in the blood lymphocytes The fall was greatest after severe operations in patients who had had a lymphocytosis before operation Of the 5 which showed an increase in the lymphocytes the operation involved little trauma in cases 23, 24 and 25 In case 26 a transfusion of several pints of blood had been given In case 27 the amputation of the leg was carried out because of gangrene from thrombosis in an arteriosclerotic artery, and the low level of the lymphocytes before the operation suggests that the onset of the gangrene had had an effect similar to that of an operation involving trauma to tissue

TABLE II—LYMPHOCYTES PER C MM. BEFORE AND AFTER OPERATION IN HUMAN PATIENTS

Case	Age and sex	Operation	Lymphocytes Before	Lymphocytes After 24 hr
1	66 M	Removal of splenic flexure	2011	394
2	56 M	Removal of sigmoid colon	1464	725
3	52 M	Partial gastrectomy	3038	624
4	47 F	,	2563	1070
5	30 M	Gastro enterostomy	2670	1283
6	49 F	Nephrectomy	2205	1344
7	37 F	Colostomy	2425	1242
8	13 M	Curettage of neck lymph glands	2957	2633
9	26 F	Appendicectomy	2360	1607
10	49 M	Partial gastrectomy	5652	1441
11	73 F	2nd stage Paul Miculicz	2296	1204
12	41 M	Partial gastrectomy	2187	631
13	16 M	Repair of hernia	2240	1520
14	36 F	Cholecystectomy and appendicectomy	2822	1140
15	81 M	Prostatectomy	2085	1311
16	38 M	Block dissection of neck lymph glands	3761	1846
17	38 M	Partial gastrectomy	5563	1155
18	35 M	Gastro enterostomy	2035	648
19	68 M	Prostatectomy	1870	1360
20	44 F	Nephro ureterectomy	1311	896
21	46 F	Local mastectomy	1550	1131
22	64 F	Cystotomy (inoperable carcinoma)	1645	944
23	69 M	Colostomy	1288	2402
24	54 M	,	1019	1623
25	26 M	Pinning of os calcis	1436	1943
26	42 F	Excision of rectum (transfusion)	2731	3697
27	45 M	Amputation of leg for gangrene	781	819

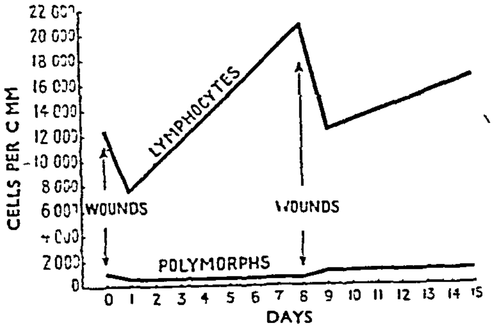

Fig 1—Effect on leucocyte count of second skin wounds in a rat during healing of the first The polymorphs were unusually few in this animal, but the lymphocytes show a well marked response to the wounds

Animal experiments with recovery —As stated, in some of the animals which lived for 24 hours or more the lymphocytes showed a tendency to rise towards the end of the experiment (e g, rat 10) In animals which had received wounds, and where the wounds were allowed to heal, a decided lymphocytosis followed the initial fall The average figures in 6 rabbits were ·

	Before operation	*After operation* 1 *day*	*After operation* 10 *days*
Lymphocytes	5350	3683	8767
Polymorphs	3950	3333	5850

And in 6 rats.

	Before operation	*After* 1 *day*	*After operation* 7 *days*	*After operation* 12 *days*
Lymphocytes	7567	5667	12 050	12 817
Polymorphs	2983	1067	3583	2200

The effect of a second series of skin wounds inflicted during the healing of primary wounds in a rat is shown in fig 1

Effects of infection —No such lymphocytosis was noted when 5 rats which had been injected subcutaneously with staphylococci in doses sufficient to produce abscesses had blood-counts done at corresponding times In these animals the lymphocytes fell after the injection and remained somewhat below the original level as the abscess ran its course

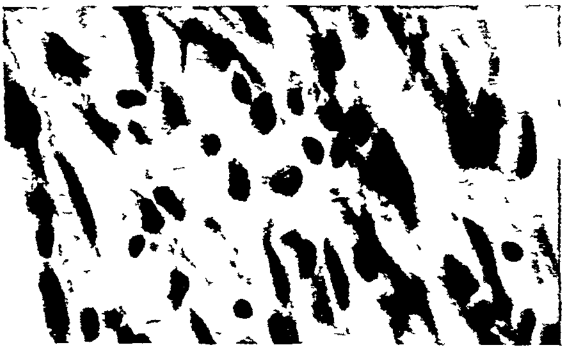

Fig 2.—Cells indistinguishable from lymphocytes among fibroblasts in healing wounds

	Before injection	*After injection* 1 *day*	*After injection* 4 *days*	*After injection* 10 *days*
Lymphocytes	7780	6920	5540	5425
Polymorphs	2460	4380	2740	2425

DISCUSSION

From the results of these experiments it seems that the effect of an operation inflicting much trauma or loss of tissue is to cause a fall in the blood lymphocytes When healing is taking place the blood shows a lymphocytosis These findings suggest that the lymphocyte plays an important part in healing and support the view that it can undergo transformation into other types of cell It is suggested that when tissue has been removed lymphocytes accumulate in the region of the loss, in the course of the first 24 hours, and as a result the blood lymphocytes fall The need for lymphocytes is met by increased output from the lymphatic tissue and a lymphocytosis in the blood follows This suggestion receives some support from the presence of considerable numbers of cells, histologically indistinguishable from lymphocytes, among the fibroblasts of the healing wounds (fig 2), and Maximow (1928) claims to have observed the transformation of lymphocytes into fibroblasts in tissue culture

SUMMARY

After severe operations in animals (e g , removal of the whole or part of the alimentary canal, decerebration, wounds of skin) the blood lymphocytes were found to fall within a few hours

In 27 human subjects lymphocyte counts were done before, and 24 hours after, various operations , 22 showed a fall in their blood lymphocytes after the operation

In rabbits and rats there was found to be a blood lymphocytosis during the healing of wounds of the skin

These findings seem to support the view that lymphocytes may undergo transformation into other types of cell —for example, into fibroblasts

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BLOOD-TRANSFUSION NEEDLE

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At the inception of the local transfusion services, the need for an adequate supply of sharpened needles became apparent We had to sharpen our own needles and for this purpose a small arkansas stone with a rounded top roughly fitting the bevel of the needle was used It was found with some needles that the point could easily be introduced into the vein, while others would either stick when going through the skin or " buttonhole " the vein A search was made in the published work for guidance as to the shape and size of the bevel of the needle

Riddell [1] states that " The end of the needle should not be too pointed or it will tear or perforate the posterior wall of the vein In other words, the bevel should be short though it should have well-cared-for cutting edges It is of no consequence whether the bevel faces upwards or downwards as long as it is sharp " French [2] in 1912 described the use of a hollow needle of large bore for the removal of blood , he gives the length as 2–4 cm and diameter as 2 mm , but does not make any comment on the point In 1927 [3] he illustrated what has since been called French's needle and states that by sharpening the back he produces a triangular point which will enter the skin more easily His illustration shows a needle with a flat bevel 8 mm long A needle with a flat bevel seems to have the disadvantage of occupying too great a volume inside the vein and thus of slowing the flow of blood

ESSENTIALS OF THE POINT AND BEVEL

This investigation was undertaken with the idea of standardising the specification of the bevel of a transfusion needle so that each point could be assessed separately Examination of new needles with a magnifying glass (× 10) showed that they were for the most part very rough in their finish and quite a few were blunt It is unwise to assume a new needle to be fit for use A set of small emery grindstones were fitted to a dentist's mandrel The mandrel was held in a special chuck and the whole was driven by means of a Singer sewing machine electric motor, controlled by foot Experience showed that the grindstone should have a diameter of between 18 and 22 mm Two stones were used, one coarse and one fine A hard rubber buff was used for polishing the bevel and removing the feathered edges By using hard rubber instead of soft rubber with emery compound it was possible to avoid finishing off by hand on an oil stone

By a tedious process of trial and error the following facts were established

1 If the bevel is too short, or represents the arc of too small a circle, there is difficulty in pushing the needle through the skin and the consequent jerk is liable to buttonhole the vein For a needle with an external diameter of 2 mm , the bevel should represent an arc of a circle of 19–22 mm The tangent of this circle at the point of the needle should be parallel to the back of the needle If the bevel is too short the vein may be split and quite a large hæmatoma formed

2 If the shoulder of the needle is not rounded off the needle again tends to go through the skin with a jerk

3 The point must be sharp otherwise it fails to engage the wall of the vein and produces clumsiness in technique

4 The cutting edge at the sides of the needle must extend up the side of the bevel just so far as is necessary to make the cut in the skin large enough to admit the needle Failure to sharpen the cutting edge causes the needle to stick first in the skin and then in the vein wall Thus, though a needle may look perfect to the naked eye and have a very sharp point it may in fact be practically impossible to make it cut through the skin The cutting edge must be undercut just sufficient for sharpness but not so much that it is difficult to make a smooth yet keen edge The sharpness of this edge is one of the most important features of a needle , it ensures a clean cut into the skin, without tearing or stretching of the skin and vein wall Other things being equal this factor bears directly on the rate of healing

5 The aperture in the bevel should have rounded edges The existence of sharp serrations which can catch in either the skin or the vein wall is one of the most potent sources of trouble in venepuncture

If all these considerations are attended to extremely little pressure will be needed for introducing the needle into the vein , with such a needle extremely few people will be found to have veins from which blood cannot be obtained without the use of suction

For whatever purpose a needle may be used—intradermal work, anæsthesia of the periosteum for sternal puncture, simple hypodermic inoculation or the like—there is an optimal shape for the bevel and point which can be worked out A standard specification for the point and bevel of any needle would be a great advantage both to the doctor and the manufacturer and the following form is suggested

1 *Specification of Steel Tubing Used*

2 *Diameter of the Bevel* —This term would refer to the diameter of the circle of which the bevel forms an arc

3 *Angle of the Bevel* —The angle between the tangent of the bevel at the point of the needle and the line of the back of the needle, representing the back of the needle

4 *Angle of the Point* —The angle made by the two sides of the bevel where they meet to form the point of the needle

5 *Shoulder* —It should be stated whether or not the shoulder is to be rounded off

On this scheme here is a specification for a taking needle steel tubing 2 mm diameter , bevel diameter 22 mm , angle of bevel 0° , angle of point 40° , shoulder rounded off And here is one for an intradermal needle steel tubing 27 s w g , bevel diameter 10 mm , angle of bevel 35° , angle of point 60° , shoulder not rounded off (the shoulder is left in this case in order that the needle may be impeded in its passage through the skin)

THE BORE

Examination of needles under the magnifying glass shows the almost incredible roughness of the bore, and steel-tube manufacturers say that this roughness cannot be avoided It is impossible to clean all the blood and dirt from the crevices in the inner wall of a standard needle Accordingly, needles were polished by spinning them at high speed and introducing a steel knitting needle (size 17) through the bore, covering the knitting-needle first with a coarse valve-grinding paste, then with a fine grinding paste (polishing paste), and finally with either ' Diamantine ' or chromium sesquioxide suspended in spirit The needle was cleaned out with

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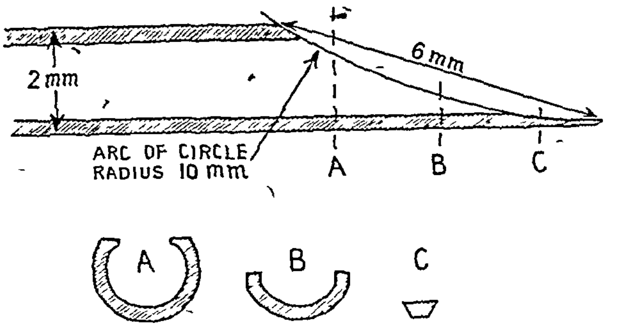
[1] Riddell V Blood Transfusion 1939 London, p 244
[2] French H *Guy s Hosp Rep* 1912, 66, 338
[3] *Proc R Soc Med* 1927, 20, 1558



Above longitudinal section through needle showing the arc of circle making the bevel whose angle is 0°
Below cross sections of needle showing the formation of cutting edges

darning wool and trichlorethylene or acetone between each of these operations The rate of flow of blood through a needle treated in this way appeared to be increased by about 25% At the same time the tendency to clot was greatly diminished and it was noticeable that blood usually flowed just as quickly at the end of the operation as at the beginning Once the bore is polished cleaning becomes much simpler, and the occasional use of diamantine or *chromium sesquioxide will maintain a* first-rate finish

METHOD OF GRINDING NEEDLES

Two circular stones, each mounted on its own mandrel (diameter 22 mm), one medium or medium fine and the other coarse grit , personally, I use a " green emery " wheel

A hard rubber buff or other finishing buff. Here I use a very hard rubber impregnated with graphite This wheel must also be of 22 mm diameter and mounted on its own mandrel

A riffler This is a small cutting tool not unlike a file, cone shaped and mounted on a shaft of the same size as the mandrel carrying the grinding stones

A small polishing lathe driven by an electric motor, preferably of ¼ horse-power *This motor must be foot controlled* and capable of large variations in speed The polishing lathe consists of a spindle mounted on bearings with a driving belt at one end or in the centre and a small chuck attached to the spindle which will grip the mandrels or the riffler If this spindle and chuck is hollow right through it can be used for holding the needle and polishing its bore as well Great care must be taken under these circumstances that flying grit does not get into the bearings

Both grindstones and polishing wheels must be trued up before use This is best done with an industrial diamond mounted for the purpose, but can be satisfactorily done with the edge of an ordinary wheel glass-cutter The grinding wheel is spun at its maximum speed The diamond or glass cutter is thus passed gently backwards and forwards across the wheel until all irregularities have been removed and the wheel is dead centre However lightly a needle is allowed to rest against the wheel it should never bounce or chatter even when the wheel is at maximum speed

Unless a complete new bevel is to be made it is not necessary to use the coarse grinding wheel The needle is placed against the stone so that the bevel fits roughly against the circumference of the stone The motor is then started at first very slowly and then accelerated up to about 8000–10,000 revolutions per minute This will produce an excessive amount of heat which must be dissipated by a continuous drip of water on the stone Where the angle of the bevel is too great and it is therefore desired to move the bevel up the shaft of the needle a slight pressure in an upward direction will do this When the point is too thick the pressure must not be upwards but forwards By a combination of pressures upwards and forwards it is not difficult to set any bevel Once set, the edges must be brought together to a point by using the side of the stone and moving the needle in a combined twisting and circular movement so as to produce a cutting edge as shown in the figure It is best to put the rounded shoulder on to the needle after the point has been made At this stage a lot of sharp and " scaggy " bits of metal will be found attached to the inner border of the aperture The riffler is then put in the chuck, and, using a speed of 8000–10,000 r p m , it cuts away these adventitia, leaving a smooth edge to the aperture which will not catch on the skin The finishing-off process is carried out in exactly the same way as the grinding process A hard rubber buff is used dry

The needle must not be allowed to overheat at all during the grinding process Overheating is shown by discoloration of the metal A cutting edge and point made of overheated steel never last long Care must be taken in the removal of grit and particles of steel from the inside of the needle after it has been sharpened

PERNICIOUS ANÆMIA AND PITUITARY INSUFFICIENCY

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IN 1937 Snapper, Groen, Hunter and I[1] reported a series of cases in which pituitary disease was associated with achlorhydria and anæmia, usually of the Addisonian type Since then I have had two more cases under observation and I have learnt of others from colleagues, so that I have little doubt that the association of these rare diseases is more than a coincidence A brief account of the two cases follows The first was not absolutely proved to be an Addisonian anæmia as no evidence of megaloblastic degeneration of the bone-marrow was secured on sternal puncture, but about the second there can be hardly any doubt

CASE 1 —Male, aged 58 The salient features in his past history were that only one testis had descended, that he had not married till age 46 and the union was sterile The first symptoms of real illness were not till age 56 when he developed bitemporal hemianopia and pernicious anæmia He showed in full measure the artistic ability, the gentleness and the dependence which so often characterise the personality structure of hypopituitarism His skin was lemon yellow and smooth, and his scalp hair thin and silky Stereoscopic radiograms showed an enormous pituitary fossa with an intrasellar fleck of calcification, and Mr J Pennybacker diagnosed a cranio pharyngioma There was achlorhydria and anæmia of high colour index with a Price Jones curve at the extreme right of the normal range The basal metabolic rate was normal In spite of treatment with liver the red cell count at first fell and reached its lowest level—red cells 2,730,000 per c mm , hæmoglobin 66%, colour index 1 2, white cells 6000 per c mm , differential count normal Although a successful sternal puncture was made at this time, the smears were identical with the peripheral blood A large internal hæmorrhoid, from which there had been streaky bleeding, was treated by the injection of phenol in oil , thereafter the patient responded well to liver and his count rapidly improved to 4,230,000 red cells per c mm and 96% of hæmoglobin

CASE 2 —Female, aged 44 She was a small wizened woman with an almost simian appearance and looked much older than her age, although her hair was still black She had never menstruated The genitalia were small and underdeveloped, and the breasts and nipples small and prepuberal The basal metabolic rate was within normal limits There were no gross changes in the visual fields or skull though the pituitary fossa was small The excretion of 17 ketosteroids was less than 3 mg a day (C L Cope) The endocrine lesion was diagnosed as atrophy or hypofunction of the anterior lobe of the pituitary gland The complaint which had brought her to hospital was a severe anæmia of the Addisonian type—red cells 1,710,000 per c mm , hæmoglobin 38%, colour index 1 1, white cells 9000 per c mm , differential count normal, serum bilirubin 2 4 mg per 100 c cm , achlorhydria On treatment with liver she had a classical reticulocyte crisis and her hæmoglobin rose rapidly to 80%

The association of pernicious anæmia with hyperthyroidism,[2] with pregnancy and with pituitary disease, suggests that there is a hormonal element or mechanism which can lead to the degeneration of the cells which secrete the intrinsic factor The incidence of pernicious anæmia increases with advancing years, and from a wider biological point of view we may consider the association of pernicious anæmia with hypopituitarism as another example of the precocious senile changes to which the patient with pituitary disease is liable From the more immediately practical point of view it is useful to remember that some of the physical and nervous symptoms of pituitary disease may be due in rare instances to an associated pernicious anæmia and may be relieved by treatment with liver

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[1] Snapper I Groen, J Hunter D and Witts L J *Quart J Med* 1937, 6 195

[2] Meulengracht, E and Hartfall, S J *Guy s Hospital Rep* 1934, 84 25

SULPHAMETHAZINE

CLINICAL TRIALS IN CHILDREN

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OUR colleagues, Macartney and others,[1] recently used sulphamethazine in the treatment of 73 cases of lobar pneumonia in adults and reported on its high therapeutic efficiency, the low incidence of nausea and vomiting compared with sulphapyridine, and the absence of cyanosis They considered renal complications unlikely in view of the relatively high solubility of the compound

This paper deals with the use of sulphamethazine in children and infants, 32 acutely ill and 6 healthy

DOSAGE, BLOOD CONCENTRATION AND TOLERANCE

The doses given by mouth were

Age (yr)	Initial dose (g)	Six hourly dose (g)
0–½	1 0	0 5
½–2	1 5	0 75
2–5	2 0	1 0
5–10	2 5	1 5
10–15	3 0	2 0

For patients under 5 years the drug is best dispensed in powders for accuracy, and can be given in suspension in milk or fruit juice The sodium salt of sulphamethazine for intramuscular or intravenous injection was supplied in ampoules of 3 c cm , each containing 1 g to be diluted to 10 c cm with sterile distilled water before use The dose of this given was 0 05 g per pound body-weight The precaution was taken of never adding a dose of the sodium salt to transfusion fluids such as saline, glucose or blood There was only one occasion to use the intravenous route, but the intramuscular route was used a number of times and in no case was there any ill effect at the site of injection

The level of the free drug in the blood was estimated in the first 24 hours of treatment and daily thereafter No attempt was made to keep the level within preconceived limits , 184 blood-level estimations were made—138 on 32 sick children and 46 on 6 healthy children The level in the cerebrospinal fluid was measured on 17 occasions The children in the "ill" group ranged in age from 2½ months to 13 years, and in these the average amount of sulphamethazine given in the first 24 hours was 4 2 g , giving a mean blood concentration of 16 5 mg per 100 c cm The lowest concentration was 3 8 mg and the highest 29 8 mg per 100 c cm The highest figure was obtained in an infant aged 2½ months, and it was found that on the standard dosage the highest levels were obtained in children under 3 years This is the age-group with the highest fatality in both bronchopneumonia and meningococcal meningitis and the early attainment of high levels is a sound principle [2] In all the ill patients the highest blood-level attained by each case throughout treatment was reached within 48 hours of the beginning of the therapy and in many cases within 24 hours Thereafter the level tended to drop considerably The average duration of chemotherapy was 4½ days , it was either discontinued abruptly or reduced doses were given for 24 hours and it was then stopped Estimations made the day after discontinuance gave only a trace or a very low concentration of the drug In 6 healthy children between the ages of 1 year and 12 years the standard dose for their age was given for 7 days and the drug level was estimated daily There was considerable individual variation The lowest figure obtained was 3 mg and the highest 22 4 mg per 100 c cm There was a notable absence of the drop in level which took place in the sick child as he improved clinically

Sulphamethazine was well tolerated by all age-groups Vomiting attributable to the drug did not occur in any of the sick children Nausea and depression are not easy to assess in children and are not notable with other sulphonamides, but it has been estimated that about a third of child patients having sulphapyridine therapy vomit as a direct result, particularly in the intermediate stages of treatment There was no cyanosis and no sign of renal trouble White-cell counts made on a number of cases during and after stopping treatment showed no evidence of depression of leucopoietic activity One infant of 5 months who had a total quantity of 7 g sulphamethazine with a maximum blood-level of 13 8 mg per 100 c cm developed a morbilliform rash Two of the healthy children aged 1 year and 10 years developed rashes after having 23 g and 53 g respectively , there was no other detectable constitutional disturbance These amounts are much greater than those required for ill children of the same age-groups

CLINICAL NOTES

Bronchopneumonia —The drug was given to 11 children with bronchopneumonia, of whom 9 were under 2 years The cases were selected because of clinical severity The diagnosis was confirmed by two observers and in all but 2 cases was supported by radiographic evidence All patients responded within 36 hours of the start of treatment and all recovered One child had a relapse a week after treatment was stopped , no chemotherapy was given for 4 days and then sulphamethazine was restarted with satisfactory response

Meningococcal meningitis —Ten patients aged 2 months to 10 years suffering from meningococcal meningitis were given sulphamethazine Group I meningococcus was isolated from 8 cases and 7 of these recovered The fatal case was in an infant of 2 months admitted to hospital on the 5th day of disease, he died 18 hours after admission having had a total dosage of 2 g

Group II meningococcus was isolated from one patient This infant, aged 8 months, died after 3½ days in hospital During this time he had 9 75 g of sulphamethazine The level of the free drug in the blood on the first day of treatment was 8 8 mg per 100 c cm , and it was 15 mg on the second day There was no evidence of improvement after increase of the standard dose At autopsy the CSF was still turbid and there was a fibrinous exudate at the base of the brain Samples taken at autopsy gave the following levels of free drug per 100 c cm heart-blood 33 8 mg , pericardial fluid 31 8 mg , muscle 18 mg

The remaining patient, a girl of 7 years, was admitted in the third week of meningitis having been inadequately treated with sulphapyridine She was extremely emaciated and had intractable cerebral vomiting Treatment consisted of an initial intravenous injection of 2 g of the sodium salt of sulphamethazine followed by intramuscular injections of 2 g every 6 hours In all, 23 intramuscular injections were given and careful examination of the injection sites showed no sign of reaction At the time of writing very satisfactory progress has been made by the patient but the question of complete recovery is still doubtful

Lobar pneumonia —Six patients aged 1 year to 13 years responded well to sulphamethazine The patient of 13 years developed a type I pneumococcal empyema All recovered

A miscellaneous group of 5 ill patients were given sulphamethazine and are included in the total number because they were fully investigated, but the clinical diagnosis is not relevant in the present account

SUMMARY

A preliminary trial of sulphamethazine in children is reported

High blood concentrations of the drug were safely obtained with the experimental dosage used It is for further investigation to determine the necessity for such levels

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[1] Macartney, D W Luxton, R W , Smith, G S and Ramsay, W A *Lancet*, 1942, i 639

[2] Colebrook, L *Ibid*, p 760

The therapeutic efficiency of sulphamethazine in a small series of cases of bronchopneumonia and meningococcal meningitis was encouraging.

The same low toxicity reported in adults was observed in children and infants. Other advantages over sulphapyridine are easier oral administration with longer intervals between doses, and much less likelihood of trouble at the site of intramuscular injection when the sodium salt is used.

We are grateful for the advice of our colleagues in the Crumpsall Hospital Laboratory, where all the bacteriological and biochemical investigations were made, and we thank Imperial Chemical (Pharmaceuticals) Ltd. for supplying us with sulphamethazine.

TRICHLORETHYLENE ANÆSTHESIA

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VISITING ANÆSTHETIST TO THE WELLHOUSE HOSPITAL, BARNET

IN June, 1941, Hewer and Hadfield[1] published a preliminary report on the use of a purified form of trichlorethylene known as 'Trilene' (I.C.I.) as an anæsthetic agent; these investigators found the drug satisfactory. A further report was read at the Royal Society of Medicine on March 6, 1942, by Hewer.[2] Since the first report I have used trilene or supervised its use, in over a thousand cases. Trilene is a very heavy liquid, vaporising much more slowly than chloroform or ether. It is non-irritating and non-inflammable; it has a smell not unlike that of chloroform. It is now coloured blue to distinguish it from chloroform, which is often coloured red.

Certain mysterious deaths have taken place among industrial workers who have to use trichlorethylene; it is thought that these were due to impurities. The post-mortem reports of two recent deaths in industry were unsatisfactory and no real explanation was given of their cause. Some workers in trichlorethylene are considered to be liable to aplastic anæmia. Whatever the cause of recorded deaths, no anxiety as to the patient's safety has been experienced in the 1000 administrations under review.

Trilene dropped on an open mask does not give a satisfactory anæsthesia because it vaporises too slowly, but if it is placed in the chloroform bottle of a Boyle's machine and given in conjunction with gas and oxygen a satisfactory light anæsthesia is obtained. Marrett, at the R.S.M. in March, showed an inhaler which he had devised by which air was inspired by the patient through a bottle containing trilene. Trilene may also be given from a Shipway apparatus. The anæsthesia obtained is in some ways like that obtained with chloroform except that full muscular relaxation is not uniform.

The similar composition of trichlorethylene and chloroform led to the fear that the new drug might have similar dangers, but so far this has not been the case. There has been no evidence of primary cardiac failure during induction with trilene, there appears to be no danger from its readministration, and there has been no evidence of delayed trilene poisoning.

The main features of the drug have been these. It is very easy to administer and is particularly suitable for general-practitioner work. Its administration over a long period appeared to cause no shock. (The longest administration in this series was 4½ hours.) There is very little vomiting even after long administration. For operations such as amputation of the breast there is much less hæmorrhage than when ether is used. The respiration-rate increases considerably after the administration has been in progress a few minutes, but if morphia or a barbiturate is given as premedication this rise is not so noticeable and in many cases is absent altogether.

For major abdominal operations trilene alone does not give sufficient muscular relaxation, but it is very useful in the induction period, gas-oxygen-trilene being used and ether added to obtain the required relaxation.

I would especially call attention to its use in midwifery for it appears to have very little effect on the uterine muscle, and a weak mixture of trilene and air will give an analgesia similar to that obtained with gas and oxygen. Other operations in this series in which trilene has been found most satisfactory have been operations on the skull such as depressed fractures (the patients were bad risk cases, but gave no anxiety whatever), operations on the nose and throat, and dental operations. Trilene gives enough relaxation of the jaw muscles to enable a large gag to be inserted for tonsil or mouth operations. It is a great comfort to both surgeon and anæsthetist to work with a non-inflammable anæsthetic, which does away with the risk of fire or explosion from lights, cauteries or suckers. Because of its property of not increasing hæmorrhage trilene made operations on the thyroid easier, and the absence of vomiting afterwards was a comfort to the patients. No attempt has been made to use trilene for intrathoracic surgery, although it has been successful for opening and drainage of empyema. It is always difficult to anæsthetise an empyema patient with gas-oxygen only, unless he has been carefully premedicated, and one is often asked to give these anæsthetics as an emergency. For orthopædic operations, especially on aged subjects—for example, the insertion of a Smith-Petersen pin—gas-oxygen-trilene is particularly suitable.

With the Boyle's apparatus in use at most hospitals today it is difficult to give pure gas and oxygen anæsthesia to the resistant patient and to keep him a good colour. The addition of trilene to the gas and oxygen makes just the required difference and does not appear to upset the patient. There are very real dangers in trying to do too much with gas and oxygen, as American anæsthetists have shown, and trilene seems to be the drug we have been looking for to enable us to avoid these dangers.

Manufacture presents no difficulties, though the supply is limited at present because such large quantities of trichlorethylene are being used in industry.

SUMMARY

Trichlorethylene, or trilene, has been used as an anæsthetic in over 1000 cases. There have been no deaths which could be attributed to the anæsthetic. Its non-inflammability, ease of administration and absence of postanæsthetic vomiting make it a satisfactory anæsthetic when full abdominal relaxation is not required.

It is useful in conjunction with gas and oxygen for increasing the depth of anæsthesia.

About half the cases in this series were anæsthetised by medical students, to whom I am indebted for their help.

Reviews of Books

Victorian Doctor

The Life of Sir William Wilde. T. G. WILSON, M.B., Litt.D. Dubl. London: Methuen. Pp. 338. 15s.

To call Sir William Wilde a Victorian doctor hardly does justice to the sort of man he was; but then Dr. Wilson's notion of the Victorians differs a good deal from the conventional one. Thus he writes, "After all, Wilde had only two faults: his bad temper and his mistresses. In extenuation of these we may plead his many good points and remember that he lived in an immoral age, for all the Victorians were not good by any means." No doubt; but Victorian Dublin was so different from Victorian London at any rate, that the adjective becomes too protean. It is customary to lament the decay of "characters"—of eccentrics and men with enough originality and independence to do as they liked; whether this is a needless regret or not, no-one could have had occasion to feel it who lived in Victorian Dublin and was familiar with the circles in which Wilde and Speranza moved. Neither Wilde nor his wife deferred to convention, and the famous trial—ominous of his son's catastrophe—would have done little harm to a more respectable man. W. B. Yeats said that the Wildes were "dirty, untidy, daring . . . and very imaginative and learned." Dr. Wilson's entertaining narrative gives body to these adjectives, and pictures a man of great ability and energy of mind who worked fruitfully at archæology, vital statistics and his specialties of otology and ophthalmology. It evokes also a picture of Dublin during the middle of the last century, which makes one, sorry that its glories are now dimmer, and its witty talkers and controversialists somewhat further from us THE LANCET, it is pleasing to recall, championed William Wilde during his trial, earning for its report, from the cantankerous editor of the *Dublin Medical News*, such epithets as "hissing-hot rhodomontade," "safe, because unproveable innuendo"

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[1] Hewer, C. L. and Hadfield, C. F. *Brit. med. J.* 1941, i, 924.
[2] Hewer, C. L. *Proc. R. Soc. Med.* 1942, 35, 463.

Some of Dr Wilson's speculations about endocrine anomalies in the Wilde family have little to support them, and he is naive in his belief that people with repressed homosexuality are quick to recognise or accept it in others But his medical like his other carefully assembled facts are otherwise admirably set forth the book is a lively, accurate, well-written chronicle of a remarkable man, living in a remarkable city

Modern Treatment of Syphilis

(2nd ed) JOSEPH EARLE MOORE, MD, physician in charge, syphilis division of the medical clinic, and visiting physician, Johns Hopkins Hospital, Baltimore London Baillière, Tindall and Cox Pp 674 38*s* 6*d*

THE first edition of this monograph by Dr Moore and his colleagues appeared in 1933 and received a warm welcome The present edition is modified in the light of knowledge gained in the past eight years It draws extensively on the clinical material studied by the Cooperative Clinical Group in general and that of the syphilis division of the Johns Hopkins Hospital in particular, but other sources are not neglected, as an authors' index of 11 pages bears witness The presentation is concise and the text benefits from the many tables and diagrams There are 33 chapters presenting the biology of syphilitic infection in relation to treatment, the prognosis of untreated and treated syphilis, the therapeutic problem in the individual patient, the antisyphilitic drugs, technical procedures and possible reactions, the treatment of early acquired syphilis and the later stages, latent or manifest in different organs and systems, syphilis complicated by pregnancy, congenital syphilis, the interpretation of serological tests (by Dr Harry Eagle), the therapeutic test, syphilis in relation to marriage and public health, the prophylaxis of syphilis and, finally, an appraisal of the present position of the intensive method of arsenotherapy

The sound principles propounded should do much to raise the standard of syphilis treatment in the United States where many patients are treated by general practitioners In this country the book will be chiefly appreciated by venereologists in the special centres, who treat the great bulk of cases They may be surprised at the emphasis attached to the use of arsphenamine ('606') in early syphilis and may remain unconvinced by the arguments advanceed in favour of the continuous alternating method of treatment The intermittent method used in Britain gives good results and it is possible that American critics of the method have failed to distinguish carefully between results of properly planned intermittent treatment and those following irregular treatment Diagnosis of congenital syphilis is discussed and the difficulties are emphasised of interpreting a positive serological result during the early neonatal period in infants born to women whose serum also gives positive results The induction of malaria in the therapy of neurosyphilis in this country is now often effected by the inoculation of infected blood, and Moore's statement to the contrary (p 375), based on a reference published in 1925, requires modification But the author would get full marks in Colonel Harrison's catechism (*Brit J vener Dis* 1942, 18, 71) and the monograph is warmly recommended to all those who treat syphilis in civil and Service patients

Vade Mecum of Medical Treatment

(3rd ed) W GORDON SEARS, MD Lond London Edward Arnold Pp 371 10*s* 6*d*

FEW subjects are more difficult to compress into a small space than that of treatment Advice on therapeutics should be detailed Dr Sears has clearly realised the danger, even if he has not been able to avoid it fully Despite his warning against the claims of the manufacturing chemists the book mentions a fair sprinkling of proprietary preparations, many of them little known He is also rather fond of such general phrases as "... may be given if desired," "... the effect is doubtful, but it can do no harm," and a "vaccine may be indicated" The reader would welcome more dogmatic advice But in the main he gives well tried standard prescriptions—in some instances perhaps even allowing tradition to outweigh reason and experiment For example when he discusses hæmatemesis he does not make it clear whether he recommends Meulengracht's method or not, and the reader is left to judge that initial starvation for 36 to 48 hours, followed by 1 oz feeds 2 hourly, working up after a week to 5 oz every 2 hours, is the method of choice In future editions it might be worth adding pruritus and cough to the symptoms dealt with, and including some of the drugs recommended in the index A table of modern—especially British—proprietary preparations would be useful

A Practical Manual of Diseases of the Chest

(2nd ed) MAURICE DAVIDSON, DM Oxfd, FRCP London Humphrey Milford, Oxford University Press Pp 575 42*s*

MUCH has happened in the chest world since the first edition of this book was published 5 years or more ago the sulphanilamide group of drugs has been generally applied to pulmonary infections, the extrapleural pneumothorax has come (and almost gone), fresh advances have been made in the methods of giving oxygen, and there has been a deeper appreciation of the mechanism and consequences of pulmonary collapse The accounts of all these subjects have been amplified in the second edition, and the section relating to atelectasis and bronchiectasis—a subject on which Dr Davidson is especially qualified to speak—has been entirely rewritten in the light of modern work The book is not only a practical manual of the whole field of chest medicine but covers the broad principles of chest surgery too, in the sane and common sense manner exemplified by the author's assessment of the true significance of thoracoplasty in the treatment of phthisis

Clinical Atlas of Blood Diseases

(5th ed) A PINEY, MD Birm, MRCP, S WYARD, MD Lond, FRCP London J and A Churchill Pp 134 16*s*

THIS familiar little book has been revised and is now a veritable textbook of hæmatology in miniature The two plates of bone-marrow smears are disappointing and not very clear, this is especially true of the marrow of pernicious anæmia in relapse, in which the characteristic open network of the megaloblasts has failed to reproduce The plate of eosinophil myelosis seems redundant and is nothing like as good as the plate which illustrates eosinophilia Very few cases of idiopathic hypochromic anæmia have a blood picture like that shown The treatment sections are generally sensible, but splenectomy is surely drastic for so vague a syndrome as chronic agranulocytosis, and mocassin snake venom is not now recommended for thrombocytopenic purpura On the whole, however, this book maintains the usefulness that has kept it before the medical public for 12 years The production is first-class and the price for a book containing so many colour plates is remarkably low

Air Raid First Aid

W A ASHFORD London Williams and Norgate Pp 46 1*s* 6*d*

THIS stiffly bound booklet summarises the essentials of first aid as presented to a first-aid party at an incident It does not attempt to cover the ground of the ordinary textbooks but supplements them, and in some instances it modifies standard teaching The author has clearly had first-hand experience of the blitz and he has put it to good use The material is presented in a clear and simple fashion and will be useful to all who have to treat air-raid casualties There are a few misleading statements for example, the novel explanation for grey asphyxia, "the red corpuscles are turning white through need of oxygen" Then bandaging a fractured patella without splints is recommended if the patient is reasonably near hospital and this is quite unsound The misconception, so widespread among first-aiders, that saline is an antiseptic rears its head again Apart from these three bloomers, serious though they are, the pamphlet is worth having because it brings into sharp focus the special conditions of air-raid work

THE LANCET

LONDON SATURDAY, SEPTEMBER 12, 1942

PERSONAL FACTORS IN ACCIDENTS

THE terms of reference of the Industrial Health Research Board, both in the past and as recently revised (see p 326), have naturally laid stress upon the importance of the board making widely known in industry those results of its researches which are capable of application With this end in view it has adopted during the war an issue of emergency reports which, with a minimum of technical details, review the work published in full in its prewar report series The latest addition deals with the personal factor in accidents[1] With the employment of greater numbers of people, many of them young and inexperienced, many on dangerous work, there has naturally been a large increase in industrial accidents, and attention to some of the factors involved is therefore timely Such factors may be divided under two broad headings—general and personal The general ones include such features as the hours of work, the heating, ventilation and lighting of the factory, the experience, age and fitness for work of the employee, and the attitudes of both the management and the workers , the personal include the individual differences between workers in accident-proneness

In the last war excessively long hours of work were found, as would be expected, to lead to an increased accident rate , though long hours are, to some extent, inevitable under war conditions their effects may be partially offset by rest pauses, changes of occupation and similar relief measures Inexperience may be let down lightly by a planned absence of exposure to special dangers during the process of learning and adaptation New entrants, too, should not be allowed to pick up the technique of their occupation in the ordinary course of production Training schemes often appear to be wasteful of time, especially for simple processes, but they often save time in the end by turning out workers who are more productive and less liable to accidents Such methods are likely to be particularly fruitful with the young worker On the other hand, elderly workers have to learn a new set of muscular habits when their physical efficiency and general quickness of uptake have begun to decline Their employment on jobs demanding very rapid movement is clearly undesirable Equally obvious is the need for attention to efficient passageways for the movement of goods and raw material, and to the height of work benches Obvious, indeed, all these precautions may be, but they are not always regarded in a drive for production which sometimes leads to the view that a toll of accidents is inevitable It is true that action based on such simple characteristics of industrial life may well have considerable effect on the incidence of accidents

Much more difficult is the problem of the accident-prone Statistical research has shown—as was long dimly recognised in practical life—that even given equal exposure to risk people are not equally liable to incur accidents, but the crux of the problem is to recognise the prone before they do themselves or others harm For nearly 20 years the board's investigators have been experimenting with tests, with some success in skilled, though not in unskilled, occupations In the former the æsthetokinetic group of tests, involving rapid and accurate hand and eye coordination, has been the best line of approach, though even here the correlation between ability to perform the tests and accident incidence is unfortunately not close enough to ensure that the small minority who will have most accidents will be surely detected An alternative, or rather complementary, method is the accurate recording of the number of accidents sustained by each individual during a specified period of exposure Though sometimes the door must be shut after the horse has gone there will be many instances in which the worker can be diverted on the basis of his experience, especially in the early stages of industrial life, to work where the accident risks are less The most effective procedure lies, the report suggests, in a combination of these two procedures—first selecting by means of the psychological tests and then at the end of an initial period removing from risk those with an unduly high accident rate All the accident-prone will still not be detected and injustice too may be done, but it will not be a serious injustice if the worker can be moved early in his career without loss of prestige or pay There is no question of not employing those believed to be accident-prone, they can be usefully employed in many occupations An essential is a careful recording of all accidents, however slight, and this clearly written report ends with a specimen form for the purpose Its widespread use would produce necessary data for further research as well as achieving the specific purpose of seeking out the accident-prone and focusing attention on work carrying particular risks of either minor or major accidents

TRAINING FOR CHILDBIRTH

THERE is a very old and widely held belief that intensive physical training in women interferes with the reproductive functions Even in recent times every development in the athletic training of girls has had to fight not only popular prejudice but professional disapproval Quite mild gymnastics or ball games have been credited with all sorts of evil consequences, from dysmenorrhœa to sterility And long before gymnastic mistresses were thought of, female circus-performers were darkly suspected of inability to bear their children normally—if they conceived at all These allegations, so detrimental to a free and healthy life for girls and women, were never firmly based on a scientific theory of movement, nor were they borne out by any statistical evidence It has never been clear why improved suppleness of the joints, or well-developed abdominal and pelvic muscles should inhibit childbearing It is the flabby, idle woman who is the obstetrician's bugbear There are no easier labours than those of peasant women who spend their lives in much heavier physical exertion than the keenest gymnastic mistresses The dangerous possibility seems to be that certain " stunts," more common among circus performers than among gymnasts, might conduce to perineal rigidity or uterine displacement In view of the importance of avoiding any methods of physical culture which would interfere with the chief function of women, investigation was overdue, and there is every reason to welcome the inquiry into the effect of gymnastic training on childbearing carried out by a joint committee of the Medical Women's Federation and the Ling Physical Education Association

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[1] Emergency Report No 3 H M Stationery Office, 1942 pp 19 4d

The Ling Association have for long been keenly aware of the responsibility which rests on the physical advisers of the future mothers of the race With this in mind, their training methods have been substantially modified in recent years to increase muscular flexibility and harmony Every effort is made by the modern gymnastic teacher to avoid producing rigidity or excessive muscular development of any part The results of the inquiry, as summarised by Dame JANET CAMPBELL in the published report,[1] show a considerable measure of success The inquiry had to surmount many difficulties, some inherent in the subject and others due to war conditions The heads of the principal physical training colleges were asked to get into touch with former students and obtain their replies to questionnaires drawn up by the committee Each student was also asked to find a sister or other relative to fill up a similar form and thus to act as a control Returns were made by 759 gymnasts and 423 controls, a number too small to satisfy a statistician but enough to give a fair picture of obstetrical conditions in a representative group The returns were classified according to the age of the women at marriage and the duration of the marriage—whether more or less than 15 years The gymnasts shared no significant differences from (or even compared favourably with) the controls as regards health in pregnancy, length of labour, amount of instrumental interference, percentage of complications and perineal damage The number of live births in each group shows that their fertility was about equal Only in respect of the number of stillbirths and miscarriages were the gymnasts at a disadvantage There were 36 stillbirths and 182 miscarriages among the gymnasts as against 10 stillbirths and 84 miscarriages among the controls As Dame JANET points out, this question calls for further investigation, as the possibility of association with greater physical activity cannot be excluded The report does not say whether the gymnasts continued their activities after marriage, so no useful deduction can be drawn at this stage

If the inquiry, limited and incomplete as it inevitably was, has proved reassuring in regard to the physical training of women, it is less satisfactory in the light it throws on the practice of midwifery and the exercise of the reproductive function in a sample group of women of the professional class For this purpose the gymnasts and their controls may be considered together. In the first place, these women of good stock and superior physique are not reproducing themselves Even among the group who married between 20 and 24 and have been married over 15 years, the average size of the family is only 2 95—less than enough to maintain the population at its present level The other groups had even fewer children This is not due to loss of fertility, for out of 97 women whose marriages were childless 43 stated that the sterility was intentional; 46% of all the women admitted to using contraceptives before the birth of the first child and 67% after the first birth Again, the amount of artificial feeding is disappointing in women who must all or nearly all have had much hygienic teaching Less than half the mothers in some groups suckled their children and the highest percentage was 77% among some of the controls, but these figures are subject to reservations and qualifications This is not a war-time or even a recent phenomenon, for the older women had a worse record than the younger ones The most disquieting revelation however is the amount of instrumental interference to which these mothers were subjected Among the primiparæ it varied from 23% to 5% in the women married when over 30, and even in multiparæ it is nowhere below 6% Dame JANET CAMPBELL points out that the data do not enable us to say whether the forceps were merely used at the end of labour in an otherwise normal birth or for some definitely abnormal condition In any event the figures should cause some searching of the heart among obstetricians The reports of voluntary and municipal hospitals, and of the domiciliary midwifery service, show that forceps deliveries among working people constitute less than 5% of the whole—sometimes much less The aim of every antenatal clinic is to give a mother the courage and capacity to deliver herself Is there such a thing as "class midwifery"? Either the working-class woman is entitled to more instrumental aid to relieve her sufferings or the middle class woman should do with less It seems unlikely that the public at large will listen to hygienic advice from the professional classes if their women-folk do not carry it out themselves A poor man's wife has presumably as good reasons for limiting her family to a degree which threatens the national existence, for refusing to breast feed her infant and for demanding instrumental aid in delivery, as these gymnasts and their sisters This inquiry gives a valuable hint on how propaganda could most usefully be directed

THE SOLDIER'S FOOT

PAIN in the feet is one of the commonest symptoms confronting the regimental medical officer, and, as an official bulletin[1] puts it, it is his duty to keep good feet symptom-free rather than render those with gross deformities fit for service The most that can be demanded of the soldier's foot is that it should be supple, painless, of adequate musculature and free from gross deformity; when these qualities are present minor degrees of hallux valgus, hallux rigidus, pes planus and cavus need not remove their owners from the A1 category Pain is the foot's main safeguard, and untreated may lead to habitual malposture and recurrent foot-strain; the MO can usefully detect the minor alterations in gait and behaviour suggestive of unreported trouble and elicit the cause In Army life there are three periods at which pain may arise—on enlistment, at PT and after route-marching On enlistment, the change from light civilian shoe to heavy Army boot throws a temporary strain on the tibialis anterior which may develop into a chronic fatigue with diffuse pain referred from tender points in the muscle, or an acute tenosynovitis may be set up The long extensors of the toes then tend to help in dorsiflexion of the foot, so that the toes become sore and callous from rubbing against the toe-cap and a valgus foot is eventually produced with clawing due to simultaneous use of all the extensors This is the incoordinated foot which, as Crisp[2] says, the owner uses as a cow its hoof During route-marching an acute foot-straining occurs, often in association with tender nodules in the plantar fascia and flattening of the metatarsal arch, and these feet must be rested until completely painless In physical training a symptomless hallux rigidus is often provoked by certain exercises The soft plimsoll is pernicious in this respect, and the stiff shrunk sock encourages any tendency to clawing of the toes The bulletin emphasises that the length of treatment is proportional to the duration of symptoms, so that early reference to an orthopædic surgeon is desirable Crisp points out that, while a minority of foot cases have entered the Army with glaring defects in too high a category, most of the trouble is due to the breaking down of apparently normal feet during training The Army boot is comfortable and harmless to the normal foot, but aggravates any tendency to weakness, stiffness or incoordination, and the speed at which gross deformities may develop and become fixed is astonishing A previously weak foot may develop an acute planus which requires long rest and careful re education in hospital for 6–8 weeks, while the stiff civilian foot will tend to break down again and again under Army conditions until the patient is hospitalised, rested and the foot manipulated Re-education is particularly required for the valgus foot with clawing due to incoordinated extensor action already mentioned, and once these patients have re-learnt the use of their intrinsics and to dissociate dorsiflexion from extension of the toes they are well on the way to recovery The main lesson to be drawn from a study of the large amount of material provided by the war is that the painful foot is a major disability which usually requires hospital treatment, incomplete outpatient supervision leads too often to a vicious circle of recurrent pain and stiffness Preliminary bed-rest is necessary for the majority, and individual attention from the physiotherapist should precede participation in the general foot-class In few other disabilities is the end-result affected so largely by the patient s willingness to cooperate and general morale, and a preliminary report by the RMO on the man's character assists in deciding between palliative and radical treatment, or whether re-grading is necessary

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[1] *Med Wom Fed quart Rev* July 1942 p 41

[1] *Army med Direct Bull* July 1942, p 1

THE DYSENTERY BACILLI

Bacillary dysentery may be caused by any one of a group of non-motile gram-negative bacilli, of which the principal members are named Shiga, Schmitz, Sonne and Flexner The first two—differentiated from the others by their failure to ferment mannitol and Schmitz from Shiga by its production of indole—are rare causes of dysentery in this country, Schmitz has been found in outbreaks of asylum dysentery and occasionally from sporadic cases outside mental hospitals, and Shiga is imported from abroad—it has lately been recovered from symptomless Italian prisoners of war[3] The Shiga, Schmitz and Sonne bacilli, the last type associated with an enteritis often unaccompanied by blood or mucus, are each single antigenic entities The Flexner bacillus, on the other hand, is an antigenic family, the members of which have their own specific antigen but share, in addition, a common group antigen which links them together Boyd[4] found that on repeated culture in the test-tube the specific antigen tends to disappear, leaving behind the group antigen As a result, the Flexner type Y of Andrewes and Inman,[5] which contains only group antigen, drops out as a specific type, as does X which Boyd regards as an incomplete variant of Z, but the family is augmented by three new types—type 103 which has a wide geographical distribution and has been found in this country, P 119 occurring in India, South Africa and the Far East, and the well-known Newcastle bacillus which is now endemic in certain parts of this country and differs biochemically from all the other members of the Flexner family in not producing indole and usually fermenting dulcitol as well as glucose with slight gas-formation Boyd suggested that these six members of the Flexner group, the V, W and Z types of Andrewes and the three new types 103, P 119 and Newcastle, should be called *B dysenteriæ* Flexner I–VI, and the Army Medical Service has adopted this new and simplified nomenclature In addition, Boyd has isolated in India a number of antigenically distinct mannitol-fermenting dysentery bacilli lacking the Flexner group antigen, and for these the name *B dysenteriæ* Boyd I, II, III &c is suggested

The isolation and identification of the dysentery bacilli has lately been made much easier by the use of new media and technical methods Formerly, isolation of the pathogen was easy only in the acute stage of the infection, and even then, because the dysentery bacillus was supposed to die very quickly, it was often advised to bring the bed-pan with the freshly voided stool directly from the ward to the laboratory Now, with the use of desoxycholate-citrate agar[6] which inhibits the growth of most coliform organisms, the dysentery bacilli can be isolated even when they are greatly outnumbered by *B. coli*, as happens in convalescence or in contact carriers or when the fæces have lain for some time before cultivation Contrary to current teaching, the Sonne dysentery bacillus will survive in fæces or on a moist rectal swab for several days at atmospheric temperatures of 15–20° C, and observations reported by Cruickshank and Gillespie in a letter on another page have established a similar viability for the Flexner bacillus At higher temperatures, such as may obtain in Egypt and India, the organisms die out more quickly so that the buffered glycerol-saline preservative should be used if there is likely to be much delay in getting the specimen to the laboratory, or alternatively the rectal swab dipped in saline agar may be tried The heavy growth on the desoxycholate-citrate agar makes it easy to pick off colonies for direct slide-agglutination with the appropriate antisera Few strains of the Sonne or Flexner races fail to agglutinate in this way, but with new cases confirmation from the biochemical reactions may be sought by subculture Serological subdivision of the Flexner group is not ordinarily required but may be essential epidemiologically for tracing sources of infection Monospecific sera can be readily prepared by absorbing out the group agglutinins Thus with modern methods the bacteriologist can make or confirm a diagnosis of bacillary dysentery within 18–24 hours of receipt of the specimen, without much fuss and with an accuracy approaching 100%

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[2] Crisp, E J *Proc R Soc Med* 1942, 35, 217

[3] *Monthly Bull emer publ Hlth Lab Serv* June, 1942, p 9

[4] Boyd J S K *Trans R Soc trop Med Hyg* 1940 33 553

[5] Andrewes F W and Inman A C *Spec Rep Ser med Res Coun Lond* 1919, No 42

[6] Hynes, M J *Path Bact* 1942, 54, 193

be gained by giving standardised tests of motor control, such as those of Ozeretzki, to backward children She notes the performance quotient obtained by giving the Drever Collins tests to individual children, but has compiled no statistics of such quotients for the whole group of children showing laterality Results would also have been interesting of a non-linguistic test of reasoning ability, such as the Raven progressive matrices which have been used successfully with deaf children The investigation, indicating as it does the importance of an essentially physiological factor, offers scope for further study, and may have a practical bearing on educational method

THE NEW CHAIR OF CHILD HEALTH

SOME £3 million a year are spent in this country on child welfare and about another £4 million on school medical services The money devoted to the teaching of pædiatrics is by comparison negligible, yet about a third of the general practitioner's patients are children and the officers of the child public health services should surely be offered opportunity for postgraduate study The money spent on research into the diseases of infancy and childhood is also infinitesimal, yet, as was suggested last week, we do not know nearly enough about how and why infants die There is with reason a growing feeling abroad that to spend large sums on the study of the diseases of old age and so little on the diseases of children and infants is to begin at the wrong end of the stick The Nuffield Trust—always sensitive to the stirrings of wisdom—has now come forward with a gift of £15,000 to the University of Durham towards the cost of establishing a professorship of child health at King's College, Newcastle on-Tyne, and Dr J C Spence's appointment to the chair is announced on another page The university intend to provide him with the assistance necessary to create a full teaching and research department, and the Royal Victoria Infirmary and the Babies Hospital will join with King's College in providing facilities for the new department, which will also be at the disposal of local public health and education authorities for advice and consultation on the conduct of their child welfare and school medical services In the region's varied populations—urban, mining, industrial and rural—Dr Spence and his assistants will find comprehensive teaching material and opportunity for varied field work

BLOOD-VESSELS AND THEIR ENVIRONMENT

Prof Rene Leriche,[1] working now far away from his famous clinic in Strasbourg, has been studying the behaviour of blood-vessels in response to pathological environment He reviews vasodilatation in its clinical bearing on the symptoms of cervical ribs , on resection of arteries , on sympathetic nerve resection , and particularly on the enlargement of vessels in the neighbourhood of arteriovenous aneurysms Inaccurate observation and inaccurate description have often given the impression that the vessels below an arteriovenous fistula dilate passively in response to increased intravascular pressure Leriche confirms what is really apparent in some of William Hunter's original descriptions—that the enlargement is one of length as well as of breadth, and is associated with hypertrophy of all the coats of the vessel It is no localised sac like dilatation , moreover it can affect the vein as well as the artery, and it can hardly be conceived that the pressure conditions within the vein tally with those in the artery So enormous may the dilatation be that Leriche has seen a case in which the iliac vessels formed a tumour in the iliac fossa suggestive of an ovarian cyst No purely mechanical explanation will suffice to account for the long, tortuous, serpentine vessels found in such cases That the pressure is raised in the artery below the fistula is obviously not the whole explanation The aneurysmal dilatation of the subclavian artery sometimes found in proximity to a cervical rib is another example of the same process The structure of the whole vessel is affected, but the condition is not histologically an aneurysm it is not a local dilatation due to weakness of one coat of the artery nor does it behave clinically like an aneurysm—after removal of the rib there is no progressive dilatation because the wall of the vessel is not weakened Leriche does not believe in a mechanical origin of the lesion, but regards it rather as a local vasomotor effect He has improved the circulatory symptoms greatly by periarterial sympathectomy, in one case with associated lessening of the dilatation, and in another with its disappearance The change in the artery is to be regarded, he thinks, as physiological rather than anatomical Leriche describes a case with rapidly progressive symptoms of Raynaud's disease in one upper limb , radiography revealed a cervical rib which was removed, and at operation the subclavian artery was found to be much dilated Arteriography, by thorotrast injection, showed that the brachial artery was not patent The operation did not relieve the vasomotor attacks, whereas a subsequent resection of the obliterated segment of the brachial artery, combined with a periarterial sympathectomy of the brachial below this point, was followed by recovery This case demonstrates that a localised arterial lesion can produce a distant lesion which may actually lead to obliteration of the distant vessel The vasodilator effect of sympathetic section is commonly supposed to be due to a paralysis of the vasoconstrictor mechanism , if this were so one would expect to find depression of the circulation in the affected part Leriche confirms Claude Bernard's observation that the effect, far from being paralytic, is an enhancement of the circulation He finds further support in the experiments of Fontaine who demonstrated by arteriography after thorotrast injection that unilateral lumbar sympathectomy in a dog caused greatly increased arterial circulation on the resected side as contrasted with the intact side Leriche, however, warns us against too easy comparison between the quick acting effects of experimental vasodilatation and the slow acting conditions of pathological environment , there is no real analogy A pathological environment gives time for active vasodilator substances to come into play, and Leriche rather favours this possibility His most notable conclusion is that the vascular system is a physiological entity which acts as a whole When one part is touched distant parts will respond " Life does not admit of the division into the compartments of our textbooks "

CHEMOTHERAPY OF COMMON FEVERS

STREPTOCOCCI and pneumococci play such important rôles as secondary invaders in the specific fevers that the possibility of control by chemotherapy has attracted many investigators Telegdi,[1] presumably in Hungary, has treated 1310 controlled cases of measles, scarlet fever and influenzal pneumonia with sulphathiazole and obtained good results in all three infections The mortality from influenzal pneumonia was reduced, particularly in the upper age groups In measles, the incidence of pneumonia and middle ear disease definitely decreased—a prophylactic result which now appears fully attested No effect was expected on the initial toxæmia of scarlet fever, so that combined treatment by chemotherapy and specific antitoxin was used Telegdi claims to have influenced particularly the onset course and duration of ear complications There is little doubt that established middle ear disease in scarlet fever is amenable to chemotherapy Whether chemotherapy can prevent otitis is less certain, the preventive value of sulphonamide drugs in scarlet fever having now been almost equally supported and contested by different observers On the whole, there seems no clear indication for routine chemotherapy in scarlet fever as long as it retains its present mild character

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[1] *Amatus Lusitanus, Lisbon*, 1942, 1 137

[1] Telegdi, I *Klin Wschr* 1942, 21, 300

Special Articles

THE CANCER ACT*

RALSTON PATERSON, MC, MD EDIN, FRCSE FFR
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THE application of the Cancer Act of 1939 in the immediate postwar years promises not only to have a profound influence on the evolution of radiotherapy but to affect the organisation of surgery Under the act every local authority becomes responsible, in regard to patients suffering from cancer, for seeing that the following are provided diagnostic facilities , adequate and efficient treatment both by surgery and by radiotherapy , a follow-up scheme with the necessary statistical records , suitable popular education or propaganda measures It is also indicated that authorities should collaborate in joint action and with such existing organisations as already provide facilities either wholly or partially

Before reviewing the methods by which these needs may be met, it is necessary to assess the number of cases likely to be involved Such an assessment is possible in malignant disease because the yearly incidence of cancer is remarkably constant, not only in total numbers, but in the numbers of each type of cancer We are therefore in a position to forecast requirements and to plan accordingly In table I such an analysis is attempted, aiming, where numbers depend on calculation at overestimate The Registrar-General's reports have been used for basic figures I have had to make a personal estimate of the situation as regards treatment Such a table can only be approximate, but it gives a good general idea of the problem The table is based on two assumptions first, that the best surgical and radiotherapeutic methods will be made available to all, but with no revolutionary improvements in their scope or effectiveness , secondly, that, short of a systemic test for cancer similar to the Wassermann, diagnostic achievement will not appreciably exceed that of present day work in good hospitals As will be seen from the numbers given in the table, this second assumption recognises that many of the common cancers, such as cancer of the stomach, will continue to be untreatable from the moment the patient is first diagnosed I do not feel that any form of organisation or of propaganda will alter this In terms of numbers for treatment, it is the four " accessible " cancers which are of greatest importance

Table I shows the maximum number of new cases per annum which will require treatment in a population of a million, and how they will be treated Column 1 shows the number of cases The number of registered cancer deaths is about 1650 per million per annum , one may reasonably add something of the order of 20% to these figures for failure of accurate certification and to allow for treated cured cases—at the present time a very low figure if taken over the whole population This gives us a reasonable estimate of the total number of new cancer cases per annum per million as 2000, divisible as to types in the ratio of the Registrar-General's figures for cancer deaths It is often argued that at any moment there are at least one and a half, if not twice, the number of cancer patients in existence as are diagnosed each year This is true but does not alter the fact that it is the number of new cases each year with which any organisation will be called upon to deal

Calculation of the fraction of new cases which will be amenable to active treatment is a harder problem Sholto Mackenzie[1] (now Lord Amulree) arrives at the number of cases of each cancer type actually receiving treatment in the country in the prewar years (column 2) It is probably safe to estimate that we will overstate the needs for the first 5–10 years of improved organisation if

TABLE I—ESTIMATED NUMBER OF NEW CANCER CASES PER ANNUM PER 1 000,000 POPULATION , PROBABLE ALLOCATION UNDER ADEQUATE ORGANISATION, WITHIN THE LIMITS OF EXISTING DIAGNOSIS AND TREATMENT

Site of cancer	PRESENT SITUATION		No per million for treatment under improved organisation	PROBABLE ALLOCATION FOR TREATMENT							Untreated (or placebo)
				Surgery—				Radiotherapy			
	Deaths per million pop (plus about 20%)	Percentage now treated ‡		Radical	Palliative	On cases primarily radiotherapeutic	Found untreatable at operation	Radical	Palliative	On cases primarily surgical	
Curable											
(a) Mainly surgical Breast	208	68	208	108	0	10	0	50	50	70	0
(b) Mainly radiotherapeutic											
Mouth	77	71	77	5	0	20	0	45	27	1	0
Uterus	133	56	133	12	0	0	0	103	18	2	0
Skin * and lip	42	64	42	20	0	2	0	20	2	2	0
Genitalia	26	50(?)	26	8	0	0	0	8	10	1	0
	486		486	153	0	32	0	226	107	76	0
Treatable											
(a) Mainly surgical											
Stomach	382	5	38	20	18	0	80	0	0	0	264
Colon	268	8	43	20	23	0	40	0	0	0	185
Rectum	168	20	67	30	30	0	0	0	7	10	101
Bladder and prostate	105	22	46	13	7	10	20	13	13	5	39
Ovary	50	29	29	16	0	0	0	0	13	5	21
(b) Mainly radiotherapeutic Pharynx and larynx	50	39	39	5	0	0	0	18	16	0	11
(c) Other sites †	118	42(?)	99	24	25	0	0	25	25	0	19
	1141		361	128	103	10	140	56	74	20	640
Hopeless											
a) Worth palliative treatment											
Œsophagus	72	21	30	0	15	0	0	0	15	10	42
Lung and mediastinum	125	7	18	0	0	0	0	0	18	0	107
(b) Seldom worth treating Other abdominal (liver pancreas gall bladder &c)	176	2	7	4	3	0	30	0	0	0	139
	373		55	4	18	0	30	0	33	10	288
Total	2000		902	285	121	42	170	282	214	106	928
				618				602			

* Excluding basal cell carcinoma † Estimates only ‡ Taken from Mackenzie s figures

we take twice his percentages as our indicator—with 100% maximum of course, since more cases cannot be treated than occur The resultant numbers for treatment are shown in column 3 Then follows a section, showing probable methods of treatment under a well-organised scheme, to arrive at these estimates, I considered each disease separately and reviewed my own fairly extensive experience of present treatment methods in the light of the annual figures of the Radium Institute, Manchester, where a large part of the radiotherapy for a population of about five million is undertaken In the table rodent ulcer is entirely omitted, since it is difficult to arrive at any figure for this disease Any unit, however, will be called upon to treat a number of rodent ulcers as well, usually by simple methods in the out-patient department

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* A paper read before the Faculty of Radiologists on June 6, 1942

[1] Mackenzie, B W S Rep publ Hlth medical Subj , Lond 1939 No 89

I have suggested the classification into three groups before [2] The curable cancers are those for which cure is possible in a worth-while percentage of all cases and in a high percentage of all early cases treated, the treatable cancers those in which cure is only achieved in a low percentage of all cases but in which treatment is essential in a moderate fraction The incurable cancers are those in which palliative treatment may be of some value, but cure is rare and likely to remain rare with present-day knowledge and diagnostic facilities The incidence and treatment of cancer per million population may be summarised in round figures from table I as follows

Incidence	
New cases per annum	2000
Untreatable from first diagnosis	900
Lengthy investigation, but not treated	>200
Maximum number requiring active treatment	900
Treatment	
Radical surgery	300
Radical radiotherapy	300
Palliative treatment	300
Cases needing some surgical treatment	600
Cases needing some radiotherapy	600
Beds required	
Average 4 weeks per patient, 900 treated	70
Average 2 weeks per patient, 260 investigated but not treated	10

It shows lack of realism not to admit that in the disease group generically called cancer there is still a large fraction which is incurable, nor is there any hope that this will be changed, except by some genuinely revolutionary discovery On the other hand, the established achievements of surgery and radiotherapy give us weapons by which some types of cancer can be cured if treated early and effectively Success or failure depends largely on the first main treatment, salvage from second or third attempts is very small To anyone familiar with what is happening today it is apparent that *effective* treatment in the *early* stages is the exception rather than the rule Two factors contribute to this failure First, delay in the patient's transit to treatment, he may delay in seeking advice through fear, his practitioner may delay through lack of experience of the symptoms or appearance of early cancer, and the hospital waiting-list may cause delay in admission Secondly, cancer is still looked upon as merely one of the diseases—almost as one of the chronic diseases—included in the scope of general medicine and surgery Few consultants concerned with either its diagnosis or treatment have any extensive experience of its particular problems The method of treatment to be adopted is determined far more by the fortuitous accident of the type of consultant to whom the patient is referred than by any adequate consultation machinery, and execution is seldom in the hands of anyone with bulk experience of a particular technique

If improvement is to be achieved, two general principles must be accepted in whatever organisation is built up that once cancer is suspected, action must be immediate, and that all specialists concerned with diagnosis and treatment are engaged in cancer work to such an extent that they really have special experience of that group of diseases The second can be realised only by the creation of a special cancer organistion to coordinate work in such a manner that adequate numbers of patients will be seen and dealt with as one group This would also make it possible to segregate enough radium and X-ray plant for the necessary flexibility in treatment methods But the most important argument lies in the gain in bulk experience of the specialty by a limited number of people The whole scheme would benefit if each of them was engaged in cancer treatment or diagnosis for at least half his working time

THE CANCER UNIT

It is, I think, inevitable, that the treatment of cancer will become a specialised branch of medical practice, like the treatment of tuberculosis and, to a lesser extent, of venereal disease, and no doubt objections will be similar to those raised twenty years ago against the inception of tuberculosis services If we disregard these, how could this specialty be organised to produce the best results and perhaps some visible impact on vital statistics? It is this ultimate structure which we should visualise now, as a guide in the transitional period

The cancer unit may take the form of a specialist hospital or be a department of a large general hospital, usually the teaching hospital of an area The general hospital is to be preferred on many grounds, provided that the cancer department has a distinct organisation of its own, separate from the hospital, on which local authorities and other hospitals are adequately represented. From each million of the population, a cancer department will treat about 900 new cases yearly and will, in addition, admit a number of cases for investigation only A million should be regarded as the minimum population which will carry a really efficient organisation The bedrock minimum must be set at half a million, and then only in geographically detached areas Efficiency probably steadily increases up to at least two million, since this allows for the maintenance of junior and senior medical officers in most of the specialties concerned, with sufficient material for each

The two main sections of the cancer hospital will be the radiotherapy section, and the surgical section in which will be included the various collateral specialties gynæcological, laryngological, genito-urinary, &c Of the 900 new cases per annum per million it will be found that, allowing for a number of cases treated by both surgery and radiotherapy, each section will be called upon to handle about 600 cases per million population served Diagnostic services will include radiodiagnosis and pathology, although they may be combined with the corresponding departments in the general hospital

The unit must finally come under one director In the period of development, however, there is much to be said for the two sections being separate, even to the extent of each having its own director Such directors must be of equal status, and must work together sufficiently to have some knowledge of each other's results, both must be members of the executive of the governing body, and each must have enough beds under his own control The position and status of such director has been well outlined by Professor Platt [3]

Radiotherapy section—It is impossible to have any separation between radium and X-ray therapy, and both must be in the hands of the radiotherapist Trained therapists of today have been recruited about equally from surgeons with an interest in radium, and radiologists interested in deep therapy Each type of recruit has had to learn the other half of radiotherapy New recruits must in future train in already established radiotherapy centres Transference of control of radium work from surgeons to therapists in the major centres in this country is well on the way, only in backward areas or undeveloped centres is radium therapy still a surgical preserve There must be a similar transference of control of X-ray therapy for malignant disease from the radiodiagnostician to the radiotherapist This is somewhat further from accomplishment, most radiologists in the larger centres now realise, however, that this transference is inevitable and in the best interests of the patient, and are choosing which half of their work they will retain Partly as an expression of this essential split and partly as a step in the aggregation of X-ray therapy plant into departments with multiple units, the various 200 kV deep therapy plants now scattered broadcast over the country in single units should be concentrated into major treatment centres

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[2] Paterson, J R *Brit med J* 1929, ii, 904

[3] Platt, H *Lancet*, 1942, i, 179

Surgical section —In contrast to radiotherapy, which is now partly centralised in many areas, the present surgical treatment of cancer is everywhere included with general surgery This decentralisation with its consequent lack of adequate numbers of cancer cases for each surgeon, is found both in the large teaching hospitals and the smaller hospitals Plans to centralise into one cancer unit with a limited staff will therefore meet powerful opposition at first, which will be augmented by the desire of the smaller hospitals to remain independent of the large general hospital to which the cancer unit may be attached Two expedient interim policies may be considered

1 All cases could be collected at the central teaching hospital but the general surgical organisation there could be left unaltered and the cases could be spread over the various surgical and specialist units

2 The right of autonomy in this matter should be conceded to the better organised hospitals, whether teaching or not, but they would be expected to work towards a segregation of cancer cases, and their distribution among a limited number of the members of each staff

The second is both the juster and the more effective and would enable a number of surgeons and specialists to give a large part of their time to cancer work Payment would be either directly, or indirectly from the local authority under the Cancer Act The ideal, however, remains complete centralisation of cases in the surgical section of a separate cancer department or hospital, with a selected staff, limited in number but genuinely experienced The number of patients requiring treatment per million population gives the clue to the number of specialists needed In a centre serving a million population one, two or, at the most, three general surgeons will be required, but only one representative of each of the other specialties, with resident or other junior assistance Even where a unit is serving two or three million the necessary additional members of staff should work directly under the man in charge of a particular specialty and not be additional officers of independent status

DIAGNOSTIC SERVICES

Difficulties of distance should not be made too much of when considering centralisation, they can be surmounted To reach the cancer case at an early stage the key-note must of course be decentralisation in the geographic sense, but not as regards personnel Multiple clinics must be established For treatment, the association of a hospital with the idea of cancer cannot be avoided but it is important that these outside clinics are neither called, nor even become known as, cancer clinics The only way to avoid this is to incorporate them in the existing outpatient-services This usually means that they will be held at voluntary hospitals, they might be called tumour clinics In table II the basic figures from table I are presented again from the diagnostic angle Allowance must be made for cases examined but not treated, either because they are non-malignant or are too advanced for treatment A more than adequate approximation will be to take 150% of the numbers likely to come to treatment Groups 2 and 3 will for the most part require admission to hospital for the necessary diagnostic procedures The clinic medical officer has therefore only two tasks to perform to recognise as probable cancer any lesion which he can either see or feel (a biopsy being made in doubtful cases except in breast cancers), and to recognise the type of symptom-complex which merits special admission for investigation as potential cancer This is not a task which calls for a team of specialists It can be done by one man, provided that he has experience and is doing a lot of it In a completely centralised cancer service it is unimportant whether he be a surgeon, radiotherapist or physician During less centralised interim organisation, where radiotherapy is arranged by collaboration with a local hospital surgical service, it would be best that a radiotherapist should be in charge of the clinic because he will also have the responsibility of deciding, in collaboration with the local surgeon, between surgery and radiotherapy In about half the cases, including most cases of cancer of the cervix uteri, the diagnosis can be made by an experienced observer merely on sight or by simple palpation The other half of the cases will need admission to the central unit for examination, and it is at this stage that team collaboration becomes important From study of the types of case seen it is clear that consultation not between a whole board of examiners but between two people will generally be what is needed—usually between the radiotherapist and either surgeon or specialist or, less often, between the surgeon and a specialist Planning in the hospital should therefore cater for this two-person consultation Once diagnosis and treatment have been agreed on the case should pass for the time being into one person's hands as his exclusive clinical responsibility, and further consultations will be sought as they are indicated

TABLE II—NUMBER OF CASES PER MILLION FOR DIAGNOSIS (based on 150% of numbers treated)

Group 1		Group 2		Group 3	
"*Spot diagnosis*" Lesions visible or palpable		*Radiological* Diagnosis mainly by X rays		*Technical* Diagnosis mainly by special exam.	
Breast	312	Stomach	177	Pharynx and larynx	59
Mouth	116	Colon	125	Bladder	99
Skin	63	Œsophagus	45	Uterus (½ of cases)	67
Uterus (½ of cases)	133	Lung	27	Ovary	44
Genitalia	39	Bone	45(?)	Brain	45(?)
Rectum	100				
Totals	763		419		314

One person should also be allocated to pathological work and become highly experienced This is possible even if the work is done in the general pathological laboratories In many cases the pathological decision will be a key decision

Where a clinic is at a distance from the treating centre, follow-up examination will also be carried out at the clinic The visiting clinician must therefore be familiar with the points to look for in treated cases It may be argued that cases are thus lost for study by the people responsible for their treatment, but the clinic held at the centre itself is bound to be the largest, and will provide a sufficient sample for study; in addition, a good records system puts the entire clinical material at everyone's disposal Diagnostic clinics must be so widely distributed that no patient faces difficulties or hardships in getting to them Clinics should be held at least fortnightly at each place

EDUCATION AND PROPAGANDA

The first essential of any propaganda scheme is that it shall be simple and driven home by constant reiteration There are four curable types of cancer (breast, mouth, skin and cervix uteri), treated early these diseases are curable in 80% of cases, treated late in barely 10% Diagnosis is not really a problem—the growth can be seen or felt The key sign or symptom of each disease at its early stages can be described in two or three words

Breast —Take thought for a lump in the breast

Mouth and skin —Get advice about a small painless sore which does not heal

Cervix —Bleeding after the change of life is dangerous, before the change irregularities must be investigated

In no other types of cancer will education or propaganda, apart from improvement in medical education, have any really great influence In stomach cancer—the great killing cancer—the disease is often advanced at the time of the first definite symptom I believe that it is only in the four accessible cancers that, through propaganda, we can sensibly lower death-rates Nothing medicine has done so far as had the least visible effect on cancer death-rates My plan would be to harness the propaganda organisation to one task—that of putting across to the public the key symptoms of these four diseases If we found that we could alter the vital statistics of these diseases we would know that the methods had been successful When any other type of cancer became controllable a practised organisation would be ready to spread the information

THE LATE CASE

What about the late cases—either untreatable or after treatment has failed? They must not be dealt with in the same wards as cases undergoing active treatment Should they go into "cancer hospitals" to die? Most of them would be happier if nursed in their own home, and it would be a fine addition to the Cancer Act if some effective scheme of home nursing could be devised and carried through by local authorities, it would need to be a much more elaborate scheme than the daily visit of a district nurse Nevertheless, it is important both from the social and from the humanitarian point of view

WHO GETS THE LION'S SHARE?

It is reasonably easy, under a rationing system, to assess the average share of food bought for a family every week, but who eats what, at the family table, is often settled more by custom and tradition than by individual need Mr F Le Gros Clark has made a study[1] of food allocation in 40 working-class households in respect of meat, cheese, fish, eggs and milk—that is, of first-class protein He finds that the old belief is still prevalent that the wage-earner doing vigorous work needs meat or its equivalent so that the father generally gets more than his ration of meat, cheese fish and eggs, and the mother and children go relatively short Milk, however, is well recognised as a food for children, and they get the lion's share of that Le Gros Clark's inquiry was made in Edinburgh by an experienced social worker who was on familiar terms with most of the housewives In order that the replies should not be coloured in any way the housewives were told that a study was being made of the relation between home and communal catering

The 40 families, all of which included children, were visited during the winter months of 1941–42 There is no evidence that except in very low income families any member of a household normally goes short of calories, and vegetables, when bought, are thought to be fairly evenly shared out The inquiry was therefore confined to animal protein The foodstuffs investigated were all rationed, or virtually rationed, at the time of the inquiry, with the exception of fish which was not bought by all Of the fathers, 5 were builders, 6 brewery workers, 6 labourers in various trades, 2 engineers, 3 motor drivers, and 2 engaged in civil defence, 4 were unemployed, and the remainder had jobs about the docks, or were employed as shop-assistant, miner, and so forth, in 3 instances the mother was the sole wage-earner The average size of the family—considerably above the average for the country as a whole—was nearly 6 members

Cheese was bought by 36 families, 18 declared that they divided it equally among the members of the household, 9 allocated all, or nearly all the cheese ration, to the grown men in the family, usually in the form of "lunch-pieces" to take to work In the remaining 9 families practice varied There is a long-standing tradition that men and cats like cheese, but that it is bad for children That even young children benefit from cheese and cheese-dishes is a notion that is only slowly gaining ground Thus there is a heavy barricade of custom to cast down before cheese gets more fairly distributed in the family

Eggs stand in a different category they are recognised as being good for the child, but at the same time the wage-earner often fancies an egg to his tea The outcome, roughly, is that the father gets his share, or more than his share Eggs of course have been scarce, but the average allowance was one egg per head per week Most fathers contented themselves with a single egg, but in 2 families the father took no eggs, and in 9 families the father got two eggs or more, partly because eggs like cheese are handy for a carried lunch Of the mothers 7 gave up their eggs either to the father or the children, and the rest ate their ration, with the exception of 2 who admitted exceeding it In 27 of the families, then, the eggs were equally shared, in 33 the children received all or more than their share On milk, too, the children did well The mothers relinquished milk to the children almost automatically thus in 38 families the mother was getting less than half a pint daily, and this includes 3 who were pregnant, in 10 families where the mother took hardly any milk the children were getting well over half a pint each at home, and more at school One of these mothers was breast-feeding a child The fathers, too, took little milk, they were as abstemious in this respect as the mothers

Meat, however, was a different matter In many cases nearly half the family meat ration (not a very large one in any case) went to the father, and some had three quarters of it or more Those who received such large proportions either had some of it in the form of lunch pieces or were convinced that they needed it in order to perform their daily work Children under five get little or no meat, though they get gravy on potatoes Nearly half the mothers were getting less than a fair share of what remained when the father had taken his whack, and the children between 5 and 18 were getting perhaps 70–80% of their official ration Fish was only bought by 19 families but in those the father, though he had a large helping compared with other members of the family, did not exceed all bounds, and the mother and the growing children did fairly well

The estimates are admitted to be rough, but if it is accepted that about half the daily protein intake should be in the form of animal protein, then the average father in this small group of working-class families seems to be getting more than half his daily protein in that form, the mother and children less than half Adolescent children need more animal protein than their fathers if growth is to be normal—an idea which is still quite foreign to most working families In practice, however, many children of school age were getting school meals in addition to their food at home, and this brought their animal protein intake up to a proper level The mother's diet and those of children who have left school are more likely to be defective Le Gros Clark suggests that public attention should now be concentrated on the diet of young people between 15 and 25, especially the girls, who are apt to go short in favour of their brothers, and who seem, in the words of the Edinburgh investigator, "to be having a particularly lean time in almost nine cases out of ten" There is more than a suspicion that the rationing of animal proteins has told especially against those who are at the most vulnerable age for the attacks of the tubercle bacillus

A breakdown of the tradition that the worker needs the lion's share of meat could probably be achieved by propaganda and extended health teaching both over the air and by health visitors in the homes The factory canteen and the school meal, by replacing the lunch piece, can release first-class protein for a fairer distribution at the family table Le Gros Clark's findings, he is careful to point out, must not be given more statistical significance than they will bear, but they pave the way for extensive inquiries along the same lines

In England Now

A Running Commentary by Peripatetic Correspondents

THE story really started one afternoon in the early spring of 1941 In Sister C's off-duty time she was discovered digging a small parcel of ground outside the door of her ward—one of the many huts of our "up graded" hospital Soon, between some old apple trees, she had raked the surface to a fine tilth, and was busy sowing beans, shallots, peas, radishes and (with an eye to future ward decoration) clarkia, cornflower and other annuals Some superior people smiled, but when later on the results of her efforts appeared on the sisters' mess table at dinner she received much approval The beans tasted a treat This spring, one result of her pioneering was that several more sisters were smitten with the desire to *dig for victory* Trowels, *forks and spades* were purchased or borrowed, a convalescent patient—a gardener—was appointed acting unpaid consultant in horticulture, and soon evidence was to be seen of the enthusiastic labour that was going on The epidemic spread The office boys appeared with two sticks and a ball of string, the RMO and the steward presented blistered hands and were heard *to wonder whether* backache would respond to radiant heat, the almoner took a hand in staking a claim outside her sanctum, the X-ray department joined forces with the masseuse and even our *military* wing commandeered the ground around their sentry-box and sowed garden peas in mass formation Then a chance remark one evening bore fruit we must have a vegetable show in the summer

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[1] From the Children's Nutrition Council 6, East Common, Harpenden (Herts) 1s

We discovered that among our latest joined housemen was one who had won prizes long ago in real horticultural shows. Moreover he has a flair for running things and knew just what was wanted, and so competition was stimulated and gardening almost ousted shop as the major topic of conversation at meal-times.

The great day arrived last Saturday. We had twenty classes: eighteen for vegetables, one for a bowl of wild flowers and one for the best arranged vase from a ward. The entrance fee was 3*d* for each entry, prizes were to be war-savings stamps. Each entry had two classes, the first was open to the produce from the gardens or allotments of any member of the hospital, the second was confined to produce from the hospital grounds. A panel of judges was formed by two friends in the neighbouring town, the lecture theatre was cleared and the exhibits placed on view. After the judging had been done the show was thrown open and the delighted prize-winners pocketed their stamps. One of the judges confessed that he wasn't quite satisfied with the award in the shallot entry, however the decision was confirmed when our oldest porter was heard to declare that the prize had been won by the firmest and most shapely shallots—"I reckon the judges couldn't 'a done otherwise." X ward sent a message to the kitchen yesterday: "Don't send any green vegetables today, we are going to eat our own."

* * *

It so happened that I entered my 70th year just as the world crashed into war. Naturally I wished to place such knowledge and experience as I had accumulated at my country's disposal, but wherever I applied I was made to realise with varying degrees of courtesy that I belonged to the past, for an epoch had suddenly closed. Whatever the future of medicine may be I shall be a stranger and have no part in it. I am forced to become a member of that lowest and most despised class—the rentiers. That is to say I am living on what I laboriously saved from years of practice and not on a pension provided by a grateful state. Already I seem to hear "definitely Edwardian—believes in evolution and the law of progress and won't realise that Marx and Engels enunciated the only true principles of science: quite moth eaten." I sometimes wonder, however, whether the "safety first" attitude of the planned future will quite compensate for the sense of adventure in the old days. Perhaps even that seems more pleasant in the retrospect than it did at the time. Anyhow, physicians will live differently in the future, even before the war the Harley Street district was becoming a hive of accommodation addresses. They will have the same experience as the Royal Academicians who no longer live in stately houses in Melbury Road or Grove End Road. The total sales at the Academy this year did not exceed the income of a single popular Victorian painter. Whether their art was worse than that of the present remains a moot point. Nevertheless "cheerfulness will keep breaking through," as I philosophically retreat into the background, where the past becomes more and more real, draws nearer and catches me up preparing to engulf me in it.

* * *

When Newton saw the apple drop, a sudden thought as light from Heaven. Bosh! The idea had been bobbing about in his head for years. Thought may sometimes be a reflex from outside, but one of that complexity must have been long woven in the fibre and pattern which is continuous from the baby's touch-taste thoughts to the dying man's frayed memories of his prime. It may have reached verbalisation point then, but far more probably Newton had to dramatise the whole affair to get his point over to others. In my insignificant sphere I can sense several natural laws but have not the mathematical ability to formulate them. There's Jones's Law, for instance. J used to be our bank manager—level-headed, safe, conventional, churchwarden, absolutely trustee stock. But when the blitz came he went all to bits and it then dawned on me that he had been walking on a tight-rope, he hadn't dared step off the straightline, that stiff conventionality was a protective mechanism, a path for a frightened soul, whereas our eccentrics have shown a great resilience to Fate's war-time rebuffs. Now I feel sure that this little truth could be suitably expressed in terms like the square of the conventionality is in inverse proportion to the coefficient of sanity. If I worked it out it would be sure to come out wrong, as my sums always did and I should as usual find that X equals Y—i.e., that eccentricity and sanity are equal, which is absurd, or isn't it? Then there's Brown's Law. Miss Brown gets a lot of pain for which I have never been able to find an anatomical basis. As a rule when patients use words like terrible, agony and writhe we conclude that they are trying to impress us rather than be strictly truthful, and Miss Brown is very lavish with such. Objective descriptions of pain have characteristics of their own, Osler's of his renal colic, and Ernest Waggett's of his endarteritis obliterans are good examples, they are meticulously boring like the golf bore's account of how he did the 5th in 4. Now the unit of pain is like the philosopher's stone, pharmacologists have tried to measure it by burning standard holes in their foreheads, schoolmasters in strokes of a cane, humorists in foot-pound hells (1 lb dropped on the foot from 1 ft), but they all come to grief because they are trying to measure two things—stimuli and receptivity. But here is a method that measures both together. Pain is in inverse proportion to the vividness of the description, or to the square root of the adjectives, or directly proportional to its boringness. Unfortunately another element of receptivity comes in, the listener's, for some people are more easily impressed or bored than others, and vary at different times of the day. Then again before one got one's formula one would have to apply a coefficient of taciturnity and verbosity and meiosis for each patient. On the whole perhaps we had better leave Brown's Law for a second Newton.

* * *

It fell to my lot a few weeks back to go down to the local station and meet the train bringing my daughter and elder son home for the holidays from their respective boarding-schools. The baby, of course, insisted on accompanying me, and the train was exactly an hour late. During that hour I was asked a vast number of technical questions about railways which I couldn't begin to answer, had to climb into various stationary and unclean trucks in sidings, explore and re-explore the "Gentlemen" and the small, bare waiting-room, cross the bridge over the line a dozen times, admire all the posters and hear their captions laboriously spelt out. When the train arrived at last it proved to be packed with supercilious-looking children of both sexes. My own pair, blinking owlishly in the corridor, evinced no disposition to get out until strongly exhorted by me to get a move on. When finally goaded to action they attempted to leave the train through a window. "Is this all the luggage?" I asked. "There ought to be a trunk somewhere," said my daughter vaguely. An obliging porter hastened towards the guard's van. "It *might* be up in front," she added as an afterthought. "All right," I said. "Hold on to the baby while I go and look." My elder son, carrying a bag in either hand and a tennis racquet between his teeth, began to follow me up the platform. "Don't follow me, you chump!" I yelled. "Stick those things in the car." The car was at the station gate in full view and not ten yards away. After a fruitless search the porter and I rejoined my daughter, who had, of course, let go of the baby. He, still thirsting for information, was lying prone on the platform with his head between the wheels and earnestly inspecting the underside of the train which was due to draw out at any moment. The trunk turned up on a later train and it was my privilege to go down and fetch it. Exponents of the boarding-school system of education stress the sturdy independence and self-reliance it teaches. I sometimes wonder. Insouciance would, I think, be a better word.

* * *

She is a shy middle-aged bespectacled spinster who keeps a wool-shop. To look at her you would say that her main interest in life was knitting. I was asked to see her because of a return of a tiresome blepharitis which she has had on and off for years. "I think it's all due to my hobby," she said. "Knitting?" I asked. "No-o," she laughed, "my real hobby—racing motoring. I used to do a lot of it at Brooklands and that's when it started." Life is full of surprises.

* * *

I was sitting in Christ Church meadows waiting for an exam—the very one in which we all slipped up about gangrene (*Lancet*, 1942, ii, 168)—and trying to read through my notes for the last time The mind is very divertable in such conditions, and it was not surprising that I started to notice the heifers They exhibited the girl-school mentality to a T At first they were crowded under one of the five possible trees where there was some shade, all milling around to get near the prefects in the middle Then some riotous girl set off for another tree, and at once, jumping and giggling, the whole herd streamed after her, unable to run without lifting their tails vertically into the air They crowded under this tree "Come on, Susan," said another heifer, "let's go off by ourselves"—and off went a white and a brown one, pursued by the whole boiling Three times they streamed round the whole vast extent of the meadows, tails in the air Susan, who was intelligent, knew it was a mistake, and turned to say so She saw the thundering herd, staggered, swung round, and galloped for her life As I got up to walk grimly to the Taylorian, they were still galloping, their tails still raised, a few dim-wits lumbering along behind without the least idea of purpose but determined, come what may, to go where Susan led

Letters to the Editor

DIAGNOSIS OF INTESTINAL INFECTIONS

SIR,—Flight-Lieutenant Vaughan's letter of Aug 29 (p 265) on the viability of the dysentery bacilli in fæcal specimens prompts us to submit a few germane observations We had already satisfied ourselves (Cruickshank, R and Swyer, R *Lancet*, 1940, ii, 803, Hynes, M *J Path Bact* 1942, **54**, 193) that the Sonne bacillus will survive for several days in fæces or rectal swab dipped in saline agar at atmospheric temperatures of 15–20° C In the spring of this year we had the chance to carry out similar tests on the viability of the reputedly more delicate Flexner bacillus Six positive fæcal specimens from different patients were kept on the bench (T 15–18° C) and plated daily on desoxycholate-citrate agar, in one the organism died out after 5 days, but in the remaining specimens the survival times were 8, 8, 15, 15, 15 days when further culture was stopped Similarly, five rectal swabs kept moist in saline agar were cultured daily, and the average survival time of the Flexner bacillus was 11 days Four positive fæcal specimens were divided, one portion being put in the incubator at 37° C and the other kept on the bench In each case, only scanty Flexner bacilli survived for 24 hours in the incubated specimens, whereas over 4 days the organism persisted in apparently undiminished numbers in the specimen at room temperature The pH of this material showed no obvious change in any specimen over 3 days

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ROBERT CRUICKSHANK
MARJORIE GILLESPIE

STERILISATION OF SULPHONAMIDES

SIR,—I was interested in your annotation of June 27 on the case of tetanus after local chemotherapy For the past year the problem of sterilisation of sulphonamide compounds for local use has been under consideration by the Committee on Chemotherapeutic and Other Agents of the National Research Council After a considerable amount of discussion, this committee decided to advise our armed forces and the Food and Drug Administration of the Federal Government that all sulphonamides which were to be used for topical application should be marketed in a sterile form We arrived at this decision largely on a theoretical basis, because up to the present time not a single case-report has appeared which suggested that the topical use of a sulphonamide compound was responsible for an ensuing infection

However, studies that had been made in this country showed that crystalline sulphonamides were occasionally contaminated with non-pathogenic spore-bearing and non-spore-bearing organisms It seemed to the committee that sulphonamide compounds might, under certain conditions, become contaminated with tetanus spores, and as it was well known that these compounds had but a minor prophylactic effect on experimental tetanus infections in mice it was decided that a recommendation should be made to the proper authorities concerning the necessity of the sterilisation of the sulphonamide compounds which were to be used for topical application

When this became known, various pharmaceutical manufacturers set to work in this country to devise methods for the proper sterilisation of crystalline sulphonamides I am enclosing a copy of a letter from Dr John H Brewer of Hynson, Westcott and Dunning, in which their method of sterilisation and control of crystalline sulphanilamide is outlined At the present time our Army and Navy are being supplied by Hynson, Westcott and Dunning with convenient 5 gramme packages of sterile sulphanilamide for topical use

Johns Hopkins University
School of Medicine

PERRIN H LONG

ENCLOSURE

The process we are now using for sterilisation is probably *much more than is necessary, but gives us a margin of safety* which is very desirable in these days of rushing things out to fill defence orders, &c We first became interested in the sterilisation of sulphanilamide when it was found that all the powder on the market from the various manufacturers contained bacteria of various kinds Many were contaminated with spore forming organisms and some were found to contain very resistant spore forming anaerobes After these findings were made we obtained the most heat resistant spore formers we could find—one strain of *Cl novyi* which the suture manufacturers use as a control organism and a strain of *Cl sporogenes* used by the canners as a control organism Most of the information in textbooks concerning the heat resistance of spores in hot air ovens was built up before the present accurate thermo electric instruments were available Since the temperature usually given for hot air sterilisation (160° C for one hour) is so near the melting point of sulphanilamide (163° C) we decided to restudy the resistance of some of the spores, making use of some of the more modern instruments with extended time as is practised by some canners It has been found that the most resistant spores of *Cl novyi* and *Cl sporogenes* can be killed at a temperature far below the melting point of sulphanilamide if the time element is extended sufficiently 130° C kills these organisms in four hours, but not in three, 140° C kills in three hours, but not in two, 150° C kills in two hours Various types of forced air ovens have been tried, both electric and gas The above temperatures will not hold for static ovens or ovens improperly baffled so that one obtains cold spots Our present technique is as follows

Spore controls are prepared by growing the organisms in cooked meat cultures for forty eight hours and storing the cooked meat culture for one month in the ice box The spores are then added to sulphanilamide and rotated in a ball mill to mix One gramme of the powder contains between 10,000 and 100,000 spores Five grammes of the powder is placed into control packages made from the same paper and prepared exactly as the finished package except it is printed in red with the words "Do Not Use Control Package" instead of the usual printing in black These control packages are tested for their heat resistance at least once each month So far we have found the heat resistance to *remain constant* Our present hot air oven which holds 50,000 packages each charge, so spaced in racks as to allow free circulation of the hot air, is loaded with control packages so that every cubic foot contains one control package The oven is routinely run at 145° C for four hours, which gives a margin of one hour and a 5° C temperature margin The oven is equipped with a thermocouple which can be placed directly in one of the packages and a recording thermostat for controlling the temperature and keeping a record on the run After the oven has cooled sufficiently the dollies are removed from the oven with the racks in place and the controls are removed and sterility tested

One fourth of each package (1 25 g roughly) is dusted into a tube of thioglycollate medium containing 2 mg of para aminobenzoic acid per 100 c cm This makes four tubes for each control package On each run several finished packages are also sterility tested This work is all done in dust free rooms to obviate contamination from the air which would hold up production The packages are quarantined in their original position in the oven dollies until a forty eight hour sterility packaging "OK" is given At this time if any controls have shown growth the trays which they control are resterilised Although we are having no difficulty now, before we got our technique working and before our oven was working properly we had many such instances In cases where contaminated controls have been found several hundred of the packages surrounding these controls have been tested and found to be sterile, showing that the organisms present in the sulphanilamide were not as resistant as our controls. However, at times we have isolated organisms equally resistant to *Cl. novyi* and *Cl. sporogenes* from several lots of sulphanilamide. The control tubes are incubated for seven days and a slipping "OK" is given.

Most of the other sulpha drugs have higher melting-points and do not offer the difficulties which sulphanilamide offers.

Professor Long also enclosed examples of the packages of crystalline sulphanilamide issued to the US Army and Navy. Each holds 5 g. The Army type consists of a stout paper envelope containing an inner sterile one perforated with holes at one end for use as a shaker. The holes are covered with a loose 'Cellophane' sleeve which is removed when the sulphanilamide is to be sprinkled on a wound. The directions say, "remove the sterile shaker package with sterile forceps." The Navy type is simpler—a cellophane envelope containing a sterile paper one, to be opened by tearing off the end. The Naval directions say, "After controlling hæmorrhage, sprinkle powder in wound, covering the depth and injured surfaces lightly; then cover with sterile dressing and bandage. Warning.—This drug to be used only as directed, using not more than two packets in wounds of one person."

MELORHEOSTOSIS

SIR,—Franklin and Matheson's description of their case, to which you refer in an annotation (Aug 22, p 224) confirms the view that Léri and Joanny's original description of melorheostosis as *hyperostose en coulée sur toute la longeur d'un membre* can no longer be accepted as adequate. Two years ago I described (*Quart J Med* 1940, 9, 1) some unusual bony lesions affecting the right hand of a boy suffering from tuberose sclerosis. This boy died eventually from the effects of raised intracranial pressure and fortunately I was able to secure a post-mortem investigation. My inquiry, details of which I hope to publish in due course, led me to the conclusion that melorheostosis represents a local disorder of osteogenesis in which a deficiency of the periosteum is associated with a characteristic hyperostosis to which the disorder owes its name.

Birmingham, 15. GILBERT S. HALL.

DYSPEPSIA IN SOLDIERS

SIR,—The paper by Dr Morton Gill and colleagues and the later correspondence raise many points of interest. The advantage of immediate admission of all dyspeptic soldiers and full investigation in a specialised unit must be weighed against certain drawbacks. Observation of a large number of such cases suggests that in many instances admission is directed purely towards the elimination of an inherently improbable organic disease. In such cases careful clinical diagnosis and disposal as an outpatient may be preferable, since inpatient observation, investigation and treatment are open to the risk of producing or increasing the patient's preoccupation with his digestion and so causing fixation of apprehensive attention upon his symptoms and his diet.

In soldiers it is difficult to exclude motivation of symptoms (unconscious or even conscious), and the will to recover is often less in evidence than in civilians earning their own living in a life to which they are more adapted. Such motivation probably accounts for the changes in symptoms often observed when questions of hospital admission or invaliding come to be mentioned. It is also noticeable that the relief of symptoms and response to treatment of peptic ulcer in soldiers is frequently much slower than in similar patients in peacetime, who were often relieved within a matter of a few days. This is the case even though in my experience soldiers with ulcer are as a rule of keen type, conscientious, anxious to do their bit and unwilling to blame the Army for their symptoms, which are usually of long standing. Even in these men, however, it will be important that their follow-up be observed after return to civilian life, since many show only little improvement after hospital treatment at the time of their discharge.

Among the large number of dyspeptics in whom, short of gastroscopy, no organic lesion can be found, general symptoms often outweigh and even antedate their digestive symptoms. When in such patients gastroscopic evidence of gastritis is found, it is difficult to attribute more than a part of their symptoms to this condition, especially since it is agreed that definite changes of gastritis may exist without symptoms at all. Failure of such cases to respond to treatment is suggested as a cause of their neurotic symptoms, but it seems that in some at least of these patients the organic gastric changes must be secondary to a primary neurosis, a sequence that is certainly understandable on clinical grounds. The extreme intolerance to anything but a special diet in gastritis is again regarded as indicative of a persisting gastric lesion; such dependence on a dietary regime may, however, be at least as often a mental state, and is indeed not infrequently suggested and implanted in the patient by his medical adviser. For this reason as much care is necessary in giving dietary advice to a dyspeptic as in advising restriction of exercise in cardiac cases.

Light diet and light duty are both expressions which well repay the most careful questioning, and their opposites—"heavy"—may also on inquiry offer illuminating insight into the nature of soldiers' dyspepsia. So many inconsistencies are apt to come to light that it becomes at once clear that the need for light diet or light work is psychological and not gastric; one case out of many may be given as an example of this.

A private, aged 29. Investigated and treated for 8 weeks, October–November, 1941, in special dyspepsia unit. Unit reports "no neurotic traits. Occult blood negative. Gastroscopy, œdematous hyperæmic mucosa with multiple erosions. Treated with bed and strict dieting for 6 weeks. Repeat gastroscopy shows gastritis to have healed, but there is residual stiffening of the mucosa *suggesting permanent* deep changes. Recommended he be posted to a unit where he has facilities for supplementing his diet, strictly avoiding all gastric stimulants and irritants. Recommendation—this patient is likely to relapse and if this occurs he should be boarded out of the Army without further investigations."

Seen by me on July 30, 1942. Since discharge from hospital has lived on special ration allowance at his own home. States he can only eat food cooked by his wife; complains of lack of energy, breathlessness, trembling, frightened when in buses, does not like the dark, fears "make his stomach turn." Such symptoms began suddenly with diarrhœa when he had a heavy job as a messenger boy aged 17, and he states that with their sudden onset he was afraid he would lose his job. On his mother's advice he had all his teeth out then, and has continued to treat himself with various medicines and diets ever since, without success. Carrying the post bag used to upset his stomach and any lifting or exertion still causes stomach pain.

Can only eat toast—without the crust. Boiled eggs cause heartburn and pain, but can eat them scrambled or poached. All potatoes cause pain except when mashed with milk and butter, when he can take them safely; cannot eat cheese or vegetables; can only take a little rice and occasionally turnip if sweet. A few mouthfuls of apple make him sick, and warm tea (*not* hot) burns him inside. Food makes him breathless and if he takes a bath he has to have the door and window open or he feels faint. States all these symptoms have persisted since the onset of his stomach trouble, age 17.

It must indeed be difficult for a soldier, after some weeks of hourly feeding and prolonged hospital dieting to regain confidence in his ability to eat ordinary food, and this must be even more difficult if he is warned to be continually careful of his food and that any return of symptoms is likely to lead to invaliding!

T. C. HUNT.

LIFE CYCLE OF THE THREADWORM

SIR,—It is perhaps somewhat presumptive, after twenty years of retirement, to enter the field of controversy in regard to the life history of *Oxyuris vermicularis*, but having in the past studied and treated large numbers of cases in native children in Malaya and Borneo I beg to record my observations in the hope of assisting in the treatment of these infestations.

My conviction is that the period occupied between the ingestion of the ova and the appearance of the fully developed female worms in the rectum may be, and generally is, only a matter of two or three days and not the two weeks so persistently stated in the textbooks. I was first convinced of this from the study of a Eurasian family in Taiping, Perak, FMS, about 1912. Three of the younger children were heavily infected, and as all of them were inveterate nail-biters there was, almost certainly, constant reinfection Two children of relatives (a boy and a girl) came to stay with the family for a holiday and each of them shared a bed with an infected child Neither of these children had, on arrival, any sign or symptom of infection, nor had they any previous history of having suffered from threadworms However on the third day one of these children had intense irritation at the anus and next day both of them showed numerous female worms in the stools, which had been preserved for my inspection, while microscopically ova were numerous in the fæces

Many will rush to their textbooks, where it is usually stated that the larvæ, after hatching, pass through two ecdyses before becoming mature, and that the duration of this cycle is two weeks Copulation takes place in the small intestine, after which the males apparently die out I suggest that this cycle may take place with far greater rapidity than has previously been thought possible

As regards treatment with drugs, past experience has not been encouraging, and when prevention of reinfection is undertaken with scrupulous care drugs of any kind are, in my opinion, unnecessary Ordinary purgation, combined with the application of an ointment of hydrarg ammon., with the addition of 5% menthol as a parasiticide and to allay irritation, generally brings about a complete cure in about a week 'Butolan' (Bayer), diphenan (BDH) and phenothiazine have lately been vaunted as cures, but I see already one death from the last named has been reported in the *Lancet* of July 11, 1942

Hove   WILLIAM BRYCE ORME

AUTUMN POLLEN FEVERS

SIR,—People over from Canada and the USA are frequently asking for, or at least about, protection from the autumn pollen-fever which produces so much distress and disability in North America The answer is that the causal plant—ambrosia ("ragweed")—doesn't exist here, there is therefore no need for protection in the autumn

This is not strictly true, there is a minor amount of trouble for some people from the pollen of our autumn composites, especially from the Michaelmas daisies which throng our gardens and are apt to fill our rooms at this time But this pollen can usually be dodged, for it is not nearly so ubiquitous as the grass pollen at midsummer Also it can be protected against by precisely the same inoculation technique as that employed so successfully against true hay-fever This is rarely necessary, I would put the ratio of the troubles from grass pollen (at midsummer) and from composite pollen (in the autumn) in the region of 100 to 5

There is also the trouble locally from heather pollen, but this is rarer still and seems to affect chiefly the plutocratic deer-stalker in peace-time Perhaps in war-time the soldier flat on his belly and creeping to an attack through heather may suddenly be overcome by sneezing, if thought worth while this also can be protected against prophylactically

Indigenous inhabitants have been asking for hay-fever prophylaxis for people going overseas It has to be explained that the timing, and even the need for protection, depends on where the man is going, it is hardly necessary outside the temperate zones where the grass grows richly, and then of course only at the local midsummer There is little or no hay-fever in the north of Africa where our men are fighting, and not very much in other tropical or subtropical regions where, if it occurs, it depends chiefly on the local rains

London W 1   JOHN FREEMAN

VESTED INTERESTS

SIR,—Your correspondent W. A G admits that "panel" practice, where doctors have had to pay for it, constitutes a vested interest with a right of compensation to the doctors if they do not continue in such practice because of government action—i e, it is the fact of purchase which gives the vested interest Doctors have originated the custom of buying and selling practices, not primarily, as W A G suggests, *for the support of medical agencies*, but agencies are frequently employed for convenience, and in order that practices may change hands in an ethical manner with due regard to the rights of both seller and purchaser Except for those squatters who have started in practice without purchasing from another doctor, and according to W A G may therefore have no claim to compensation for either private or panel, all practising doctors have purchased their panel and private work as a whole, and must surely be said to have an equal right of compensation for both parts The panel patient is no more a chattel to be sold or transferred against his will than is the private patient.

A J K D

MASS RADIOGRAPHY IN THE FACTORY

SIR,—Dr Stanford has done a good piece of work, and his success in persuading a number of workers to travel some distance to his X-ray apparatus is an achievement, but I feel he may be wrong about the capacity of his workpeople for understanding new ideas The 30 women in one of his shops who declined to work there after he had explained his scheme to them had obviously misunderstood him Their mistake may not have arisen simply because of the low "average mental level of the shop" I do not agree that the workers "hold the medical profession in profound suspicion", they may feel like that towards their employers, but I believe their tendency is to trust the doctor, perhaps expecting rather too much of him My own experience is that workpeople, particularly organised workpeople, quickly understand the advantages to them and the community of mass radiography, but almost as quickly perceive its implications And I agree with them that additional beds must be allocated, allowances for dependants should be made, and some sort of provision for graded return to work is needed, preferably on the lines of the recent memo of a committee of the Tuberculosis Association

Edgware   A STEPHEN HALL

Infectious Disease in England and Wales

WEEK ENDED AUG 29

Notifications —The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever, 1455, whooping-cough, 1212, diphtheria 717, paratyphoid, 11, typhoid, 18, measles (excluding rubella), 3165, pneumonia (primary or influenzal), 352, puerperal pyrexia, 168, cerebrospinal fever, 66, poliomyelitis, 14, polio-encephalitis, 2, encephalitis lethargica, 3, dysentery, 91, ophthalmia neonatorum, 94 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Aug 26 was 1458, including scarlet fever, 313, diphtheria, 164, measles, 234, whooping cough, 243, enteritis, 51, chicken pox, 76, erysipelas, 44, mumps, 53, poliomyelitis, 1 dysentery, 24, cerebrospinal fever, 8, puerperal sepsis 29, enteric fevers, 7, german measles, 4, glandular fever, 1, malaria, 1, other diseases (non-infectious), 123, not yet diagnosed, 82

Deaths —In 126 great towns there were no deaths from scarlet fever, 2 (0) from enteric fevers, 2 (1) from measles, 9 (3) from whooping-cough, 16 (0) from diphtheria, 54 (4) *from diarrhœa and enteritis under two years*, and 11 (1) from influenza The figures in parentheses are those for London itself

Middlesbrough and Birmingham each reported 6 deaths from diarrhœa, Liverpool 5 and Manchester 4

The number of stillbirths notified during the week was 207 (corresponding to a rate of 34 per thousand *total* births), including 15 in London

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MACHINE TOOLS OF MASS RADIOGRAPHY —The Minister of Health has appointed a central technical committee to *advise on the organisation of mass radiography* The new body will be a subcommittee of the minister's standing advisory committee on tuberculosis, and its members are chairman, Mr T Lindsay (Ministry of Health), Dr A E Barclay, Dr G Lissant Cox, Dr James Ferguson, Surgeon Commander W G C Fitzpatrick, Dr F R G Heaf, Dr George Jessel, Major Peter Kerley, Brigadier D B McGrigor, Dr S Cochrane Shanks, Dr Norman Smith, Wing Commander R R Trail, and Dr Harley Williams (secretary), with representatives of the Ministry of Labour and the Department of Health for Scotland The first sets of apparatus are expected to be available before the end of the year, and the remainder of the 25 already ordered will be in use during 1943 The committee intends to provide a scheme for the employment of these units throughout the country, including adequate technical standards It has already considered the training of personnel and the allocation of the first sets

Obituary

GERARD JOSEPH HANLY

MB NUI, FRCS, FRCSE

ACTING GROUP CAPTAIN RAF

Group-Captain Gerard Hanly, who died on active service on Aug 6 as the result of a flying accident qualified at the National University of Ireland in 1923 and was appointed to a commission in the medical branch of the Royal Air Force a year later During 1925–29 he served in India and on his return to this country at RAF hospitals at Halton and Cranwell He took the FRCSE and qualified as a pilot before he was posted in 1933 to Iraq for surgical duties He returned in 1936, and continued to fill specialist posts until again posted to Iraq in 1941 to command the hospital at Habbaniya.

Hanly was an able surgeon and an efficient and zealous officer, popular with his colleagues and his staff His interest in flying combined with his professional qualifications made him particularly suited to the care of RAF personnel and gave him an insight into the problems peculiar to the Service which lent weight to his advice

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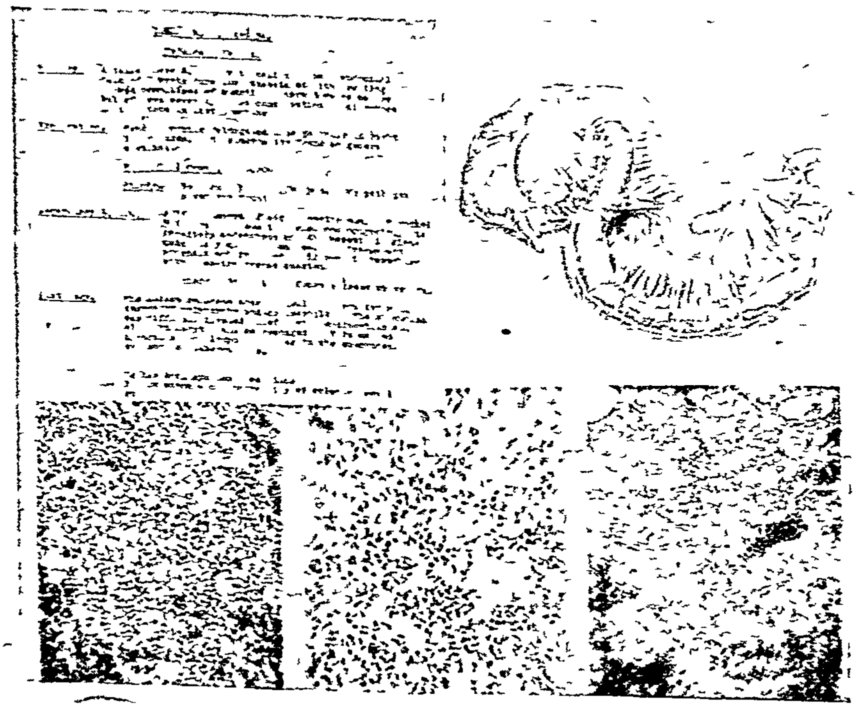
Surgeon Commander **James Michael McNamara**, RN who died from wounds last April, qualified MB from the National University of Ireland in 1923 He entered the Navy at the end of 1928 as a surgeon lieutenant for short service and transferred to the permanent list in 1932 Two years later he was promoted surgeon lieut - commander and he received his final rank in 1940 while serving on HMS *Hermes* He was forty years of age

Notes and News

PATHOLOGY IN PAINT

Hospital museums generally contain a few pots which provoke nothing but ribald guess-work and a good many more which give a thoroughly false impression of the lesion they are supposed to illustrate Nowadays it is increasingly difficult to get mounting and preserving materials for either operative or post-mortem specimens and the maintenance of natural colours is thus a temporarily lost art This has led the Middlesex county council to appoint Miss D H Barber who had already made drawings for the clinical staff as medical artist to the Central Middlesex County Hospital With the help of her careful and accurately coloured drawings, teaching cards like the one reproduced here can be made up A picture of the specimen in full colour is seen alongside microphotographs of its sections and a typewritten account of the case She is also able to make drawings of gastroscopic findings and extensive neuro-surgical operations which could not otherwise be reproduced These illustrations will be a valuable addition to the museum, and may in turn be accepted not merely as a substitute for other teaching material but as an advance



EYE INJURIES IN COALMINES

Ulcer of the cornea is common in the eye wards of the Edinburgh Royal Infirmary, and in a series of 350 ulcers 66 8% occurred in coalminers The condition is serious and the results of hospital treatment are poor Often no useful vision is left in the affected eye The average stay in hospital is about three weeks After two years' research work for the Ross Foundation for the Study of Prevention of Blindness in the pharmacology department of Edinburgh University it was discovered that 'Albucid soluble' is more effective in preventing infection of the cornea than any treatment previously used As the preparation is harmless to the eye it was felt that it could be confidently recommended as a useful first-aid treatment in ambulance rooms at collieries Thirty collieries in Scotland were selected for a trial of the new treatment and after six months the results have been summarised thus in a report issued by the foundation .

Total number of men employed at the collieries	23,500
Number of injuries treated with albucid soluble	646
Foreign bodies removed from the eye with brush	360

Of all cases treated at the ambulance room fifteen men lost 74 days' work, an average loss of 5 days Only seven cases were admitted to hospital with corneal ulcer during the six months and three of these had not had albucid treatment The length of stay in hospital varied from 19 days to 3½ months The success of albucid soluble in preventing infection and ulcer of the cornea has therefore been outstanding and the new treatment is greatly appreciated by workmen who regard it as a great improvement on the old The report has been brought to the notice of the Mines Department and the Factory Department of the Ministry of Labour and is obviously of wide general interest

THRASHING IT OUT

Since free speech is our birthright it is high time we learned to speak freely that seems to be the feeling which has moved the Association for Education in Citizenship to sponsor a series of handbooks for discussion groups under the ominous but stimulating title—taken from Mr Roosevelt—of *Unless We Plan Now*[1] The first four of the series are now available In the first Eva Hubback gives a thoroughly practical account of how to lead discussion groups, with suggestions for reading on modern political ideas, on governmental social and economic problems at home, in the Empire and abroad, international affairs, and psychology and clear thinking In the second handbook Francis Williams discusses the democratic idea Frank Hardie asks, in the third, "is Britain a democracy ?" He gives a concise picture of our electoral system and the structure of government The fourth, by Elizabeth E Halton, sets out some of the principles of planned housing under the title *Our Towns* The writers offer suggestions for reading, subjects for discussion, or lists of films and exhibitions bearing on their subjects Other handbooks in this series are to be on economic reconstruction, health, school education and schools, population and the cinema The association hopes in this way to encourage organised discussion of social, economic and political problems arising out of the war in such bodies as debating societies and discussion circles formed in the Forces, among civil defence workers, and in youth groups, church groups and women's societies

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[1] Published for the Association by the English Universities Press Ltd St Hugh's School Bickley Kent 3*d* each

Nothing clears up the opinions of a woolly thinker so well as the discipline of making a speech about them , a clear thinker profits by what Prof R S Aitken has called the cross-fertilisation of other minds These handbooks carry the germ of plenty of lively thinking

University of Manchester

The degree of DSc in physiology has been conferred on Squadron-Leader Denis Williams, MD

University of Durham

Dr J C Spence has been appointed to a chair in child health at King's College, Newcastle on Tyne, which the university has created with the help of the Nuffield Trust

Dr Spence, who is 50 years of age, graduated with honours in medicine from the University of Durham in 1914 During that war he served with the 11th division in Gallipoli, Egypt and France After holding resident appointments at the Royal Victoria Infirmary and at Great Ormond Street he worked with the John and Temple research fellowship at St Thomas's Hospital, and later at the Johns Hopkins Hospital with a Rockefeller fellowship He returned to this country and to Newcastle, where he was clinical pathologist to the Royal Victoria Infirmary before being appointed to its staff and to the staffs of the Babies Hospital and the General Hospital He also became lecturer on diseases of children in the University of Durham He was one of the foundation members of the British Pædiatric Association and has been a keen critic of the education of medical students in child health Dr Spence took his MD in 1921, was elected FRCP in 1930, and his Bradshaw lectures to the Royal College of Physicians on the nature of disease in infancy were published in our columns (*Lancet*, 1941, i, 777)

Society of Apothecaries of London

At a court of assistants held on Aug 18, with Sir Stanley Woodwark, the master, presiding, it was resolved to revive the premedical examination in chemistry, physics and biology

The diploma of the society was granted to C A Anderson, R Powell, R Gunewardena, T W Renton, G Jarratt, P L McN Armstrong, A G S Bailey and F A Rutland

British Orthopædic Association

The annual general meeting of this society will be held at Nottingham on Sept 25 and 26 under the presidency of Mr G R Girdlestone On the morning of the 25th a clinical meeting will be held at the Harlow Wood Orthopædic Hospital, in the afternoon there will be a discussion on rehabilitation followed by a demonstration, at the Rehabilitation Centre for Miners, Berry Hill, near Mansfield On the 26th the meeting will be continued at the General Hospital, Nottingham

Industrial Health Research Board

The Medical Research Council have appointed the following to be members of their Industrial Health Research Board for the next three years Lord De La Warr (chairman) , Mr F C Bartlett, FRS, professor of psychology in the University of Cambridge , Brigadier General A C Baylay, Engineering and Allied Employers National Federation , Dr J C Bridge, senior medical inspector of factories , Dr A N Drury, FRS, Medical Research Council , Dr Thomas Ferguson, deputy chief MO of the Department of Health for Scotland , Dr M W Goldblatt, group MO of Imperial Chemical Industries at Manchester , Mr A Bradford Hill, DSc, reader in epidemiology and vital statistics in the University of London , Dr Donald Hunter, physician to the London Hospital , Dr Esther Killick, professor of physiology in the University of London , Air Vice Marshal Sir David Munro, chief MO at the Ministry of Supply , and Mr J L Smyth, general secretary of the Transport and General Workers' Union Prof A W M Ellis, FRCP, director of research in industrial medicine under the council, will also attend all meetings Dr R S F Schilling, one of H M medical inspectors of factories, has been seconded to the service of the council by the Ministry of Labour to act as secretary of the board The terms of reference of the board have recently been revised and are now as follows " To advise and assist the Medical Research Council in promoting scientific investigations into problems of health among workers, including occupational and environmental factors in the causation of ill health and disease, and the relation of methods and conditions of work to the functions and efficiency of body and mind , and in making known such results of these researches as are capable of useful application to practical needs "

Paddington Medical Society

This society will hold an informal reception at St Mary's Hospital, Paddington, on Sunday, Sept 20, at 2 30 PM, where members will meet medical men and women from America, the Dominions and India who are in this country on war service

Socialist Medical Association

On Wednesday, Sept 16, at 5 30 PM, Prof M Greenwood, FRS, will speak to this society on epidemiology and war On Wednesday, Oct 7, at 5 30 PM, Prof J A Ryle will discuss social medicine Both meetings will be held at the Conway Hall, Red Lion Square, London, WC1

Medical Casualties

The following RAMC officers have been posted as prisoners of war WS/Captain A M Boyd, MB Belf , Captain E T Gilbert, MB Belf , Captain W O James, MB Edin , WS/Captain A MacFarlane, MB , Major J Parkes, MRCP, WS/Captain E T M Smith, MB Birm , and T/Major A McL W Thomson, FRFPS

Survey of Scottish Hospitals

The Secretary of State for Scotland has appointed Prof J M Mackintosh, Prof C F W Illingworth and Dr R J Peters to investigate the accommodation, organisation, equipment, staffing, number and origin of patients treated in the general and special departments of West of Scotland hospital The survey, which may develop into a census of all Scottish hospitals, will be complementary to the work of the Hetherington Committee now inquiring into questions of principle likely to be involved in a large scale hospital reorganisation

STUDENTS GUIDE CORRIGENDUM —The regulations about submitting case-records and commentaries to the Royal College of Obstetricians and Gynæcologists apply to candidates for the Membership examination, not to those entering for the DRCOG as stated in our issue of Aug 29, p 247

Appointments

WILSON JOHN, MB RSO at the Montagu Hospital, Mexborough

THISTLEWAITE ELEANOR C , MB ST AND temp asst MOH for Portsmouth

Births, Marriages and Deaths

BIRTHS

BRODRIBB —On Sept 2, at Buxton, the wife of Captain H S Brodribb, RAMC—a son

HOUSEMAN —On Aug 29, at Woking, to the wife of Lieutenant Gordon Houseman, RAMC—a daughter

KERSHAW —On Aug 28, the wife of Surgeon Lieutenant W E Kershaw, RNVR—a son

MCGREGOR —On Aug 26, at Croydon, the wife of Dr James S McGregor—a daughter

NEWNS —On Aug 30, in London, the wife of Dr G H Newns—a son

ROBINSON —On Aug 30 at Bury St Edmunds, the wife of Squadron-Leader R G Robinson, GM, MB, RAFVR—a daughter

SCHOLFFIELD —On Aug 26, in London, the wife of John Scholefield, FRCS—a son

WILKINSON —On Sept 7th, at Harborne Road Edgbaston, to Agnes Hallimond MB, MRCP (née Crozier), wife of *Prof* Kenneth Douglas Wilkinson, OBE, MD, FRCP—a daughter

MARRIAGES

ARMSTRONG—AUSTEN —On Sept 4, in London Richard Armstrong, FRCP, to Alison Mary Austen

DEATHS

GIBSON —On Aug 31, at Orton, Westmorland, Robert Wilson Gibson MD EDIN, aged 80 years

JOHNSTONE —On Sept 1, at Preston, Lancs, George Gordon Johnstone, MC, MD CAMB DPH

LOW —On Sept 2, Vincent Warren Low, CB MD LOND, FRCS, of Harley Street, W1

MEYER —On Aug 30, at Exeter Charles Hartwig Louw Meyer, MD LOND, lieut colonel IMS retd , aged 82 years

NEFF —On Aug 28, at Nicosia, Eroll Aubrey Neff, CMG, MCPS Alberta, director of medical services Cyprus

WATERSTON —On Sept 4, in Edinburgh, David Waterston, MD EDIN, FRCSE FRSE aged 71

WOODROFFE —On Sept 3, in Bournemouth, Harry Dobrée Woodroffe MD DUBL

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

BRONCHIECTASIS WITHOUT DISABILITY

REPORT ON 25 CASES

L C MARTIN
M D CAMB, M R C P
PHYSICIAN TO THE EMS

F R BERRIDGE
M B CAMB, D M R
RADIOLOGIST TO THE EMS

RESEARCH ASSISTANTS IN THE DEPARTMENT OF MEDICINE,
CAMBRIDGE UNIVERSITY

UNTIL recently the term bronchiectasis brought to mind the picture of an ill patient with clubbed fingers, persistent cough, copious foul sputum and an ultimate death from toxæmia or cerebral abscess Apart from this classical picture there were cases of dry hæmorrhagic bronchiectasis, typified by repeated hæmoptyses and lack of other striking symptoms or physical signs (Pinchin and Morlock 1930, Moll 1932, Wall and Hoyle 1933) Only patients with these types of bronchiectasis appear in teaching hospitals and students remain unaware that bronchiectasis can exist without serious and spectacular symptoms—a condition termed simple bronchiectasis by Roles and Todd (1932) and described by Kerley (1934)

The objects of this paper are to describe 25 examples of bronchiectasis seen during 2 years in EMS hospitals among serving soldiers, most of whom were graded A1 in the Army, and to emphasise that even extensive bilateral disease can occur among men of healthy appearance and with little incapacity Many of the cases were detected as a direct result of the war and the facilities provided by the EMS for in peace-time few of the patients would have sought or gained admission to hospital The rigours of service life may have brought out symptoms which might otherwise have remained dormant for some time, and in the EMS hospitals concerned there were no outpatient clinics so that we had the advantage of investigating the men in the wards Most of the patients were admitted to hospital with acute bronchitis or other inflammatory chest episode, but in some the bronchiectasis was a chance finding after admission for some unrelated disease

The 25 cases were all soldiers who joined during the present war, except one who also served in 1914–18; 21 cases were between 19 and 29 years, the remaining ages being 32, 33, 33 and 52 years (see table) As civilians they had been artisans or manual workers, apart from 3 motor drivers, 2 clerks, 1 student and 1 male nurse

CLINICAL FINDINGS

Symptoms—Cough and sputum were presenting symptoms in 23 cases, dry pleurisy in 1 and evening pyrexia in 1 Subsidiary symptoms were dyspnœa and wheezing on exertion with recent lassitude or malaise in a few cases There was a history of hæmoptyses, all small, in 7 cases Apart from the case with dry pleurisy none of the men were incapacitated, and nearly all were grade A1 in the Army; those who were not had been downgraded for flat feet, poor vision or other extrapulmonary limitations Their state contrasts sharply with the distressing clinical pictures of bronchiectasis in textbooks

Cough was present in 23 cases for variable periods—under a month in 4 6–9 months in 4; 2–3 years in 2; and for many years in 13 cases In few was it constant and then not severe, being usual on rising, often attributed to smoking and generally regarded as not abnormal Few patients had sought medical advice in civilian life and only 2 had been X rayed (while in sanatoria suspected of phthisis) The cough was intermittent in most cases, and as a rule came on in winter after a sore throat, cold or chill Patients accepted the fact that they were chesty in the winter, but apart from full-blown attacks of bronchitis they rarely stayed away from work Sputum was produced by these 23 cases either constantly or intermittently according to the nature of their coughs, it was usually thick and yellow, never copious and only described as tasting nasty by 2 patients, 2 patients denied cough or sputum but one of them, admitted with a dry pleurisy, produced about an ounce of sputum daily Specimens obtained from 18 of the cases were all negative for tubercle bacilli

Of the 7 who had had hæmoptyses case 8 had had staining of sputum once 9 months before, case 9 had had two attacks, 9 months and 3 months before admission, case 11 had had two attacks, 3 months before admission and again while in hospital for treatment of varicose veins (this hæmoptysis led to examination of his chest), case 14 had had bloodstained sputum during an attack diagnosed as pneumonia a month before admission, case 20 had had hæmoptysis in 1900 during an attack of pleurisy; case 23 had had three attacks during the 18 months before admission (a typical case of dry hæmorrhagic bronchiectasis); case 24 had had hæmoptysis in 1941 during an attack of pleurisy

Nightsweats were reported in 6 cases, but were severe in none. Only 4 had lost weight, in the others the weight had risen or remained steady since joining the Army

Past history—There was a history of pneumonia in 13 cases In 10 of them this was during childhood or infancy; 2 had had several attacks In view of the clinical similarity between pneumonia, atelectasis and the many other inflammatory processes in childhood, a past history of "pneumonia" cannot be regarded as reliable There was a history of pleurisy in 8 cases and of bronchitis (in some several times or every winter) in 17. Whooping-cough was reported in 6 and measles in 8 cases during childhood Only 4 of the 25 cases gave no history of any significant chest disease Cases 13 and 19 had been in sanatoria in the past for suspected phthisis, cases 17, 19, 23 and 24 had been in military or EMS hospitals during the present war, yet in none had bronchiectasis been diagnosed This emphasises our point that bronchiectasis is still often unrecognised among patients who do not answer to the textbook descriptions

The exact part played by past chest diseases is difficult to assess when an established case of bronchiectasis is seen many years later. Pneumonia and atelectasis can both initiate bronchial dilatation if the affected lobe or lobes do not subsequently expand again properly, but

BRONCHIECTASIS IN 25 SERVICE PATIENTS

Case	Age	Past history	Type and distribution of bronchiectasis
1	33	Br often	Saccular, rt LL and ML (L lung not filled)
2	24	Pn as child pl 1940	Cylindrical rt LL, lt LL retrocardiac and ant basal bronchi
3	21	Br as child	Cylindrical; rt basal, lt. base normal
4	22	Pn twice as child, br twice	Fusiform lt post basal, rt. ant and post basal bronchi
5	29	Pn at 3 yr	Early cylindrical, lt. basal and rt ML
6	32	Pn at 18 yr, br often	Cylindrical, lt LL (rt LL normal)
7	25	Pn as child, br every winter	Saccular, rt ML and ant basal bronchus rt LL (lt lung normal)
8	21		Cylindrical lt post basal and retrocard bronchi (rt LL incompletely filled)
9	26	Br twice	Cylindrical lt LL (rt ML and LL normal)
10	28		Saccular, lt axillary basal and ant basal bronchi; few saccules in rt LL
11	26	Pl and pn at 7 yr, br twice	Cylindrical lt post basal bronchus (rt base not filled)
12	22	Pn at 5 yr and 3 times since pl at 20	Saccular, rt UL, ML and LL (lt lung normal)
13	20		Saccular rt. UL, ML and RL (lt. lung not filled)
14	20	Pn at 19	Cylindrical, lt ant., post and axillary basal bronchi, rt. retrocardiac bronchus
15	29		Saccular lt LL below 1st and 2nd dorsal bronchi (rt. base normal)
16	33	Br once	Cylindrical rt post basal bronchi (rt ML not filled lt LL normal)
17	19	Pl and pn at 19, br once	Cylindrical, rt post basal bronchi (lt base normal)
18	22	Pl at 22	Cylindrical rt retrocardiac bronchus
19	28	Br several times	Cylindrical, rt LL (lt LL not well shown)
20	52	Pl at 11 yr, br several times	Fusiform, lt LL (rt lung not filled)
21	22	Pn at 5 yr, br often	Early cylindrical, lt. LL and rt LL
22	28	Pl at 14, br once	Cylindrical lt LL and rt ML (rt LL normal)
23	26	Pn at 5, 7 and 11 yr; br often	Saccular, lt. LL (rt. LL normal)
24	41	Pn infancy, pl at 41 br several times	Saccular lt. UL and LL; rt. ML and LL
25	25	Pn and br. as child	Saccular, rt. UL, ML, and LL, lt UL

Br = bronchitis Pn = pneumonia. Pl. = pleurisy
UL = upper lobe ML = middle lobe LL = lower lobe

such inflammatory episodes repeatedly occur in a lung already the seat of bronchiectasis, so that one of them cannot be positively incriminated as the initiating factor unless the patient had had a previous bronchography The difficulty in stating the total duration of bronchiectasis in any of the cases in this series is thus evident If, however, the onset is held to date from one of the many chest diseases during childhood then the orthodox pessimistic outlook can hardly be maintained in view of the patients' present ages and military categories

Physical signs —Although some patients had bilateral bronchiectasis or considerable unilateral saccular disease none presented a toxæmic or ill-nourished appearance, 3 however were noted as undersize In 5 cases there was early clubbing of the fingers, amounting to shiny, rather curved nails with some loss of the crevice between finger and nail bed (as depicted by Lovibond 1938), only 1 example of gross or drumstick clubbing was seen This contrasts with the statement of Burrell (1936) that "clubbing of the fingers is almost always present in bronchiectasis," though he adds that "it is more marked in the toxic form"

Physical signs in the chest varied considerably in different patients and in the same patient from time to time *No abnormal physical signs could be elicited* from one patient who had had 2 small hæmoptyses and was found to be suffering from dry hæmorrhagic bronchiectasis *Impairment of percussion-note, diminished* air-entry, persistent coarse or medium râles and scattered rhonchi were commonly found in various combinations, while pleural friction was audible and palpable in 4 cases over the affected area of lung Bronchial breathing was rarely heard Of all physical signs impaired note, poor air entry and persistent râles were probably the most common.

The histories and symptoms of these cases, together with such physical signs made a diagnosis of bronchiectasis probable on clinical grounds alone and prompted bronchography, but exact interpretation of the physical signs by themselves in terms of partial collapse, pneumonitis or consolidation was impossible, and elucidation rested on radiological findings McGibbon and others (1939) found the same difficulty with physical signs in case of unresolved pneumonia and stressed the necessity for full radiological and bronchoscopic examination in such cases We were impressed by the similarities in history, symptoms and clinical signs existing between cases of chronic purulent bronchitis and true bronchiectasis, and although a plain radiogram often excluded the bronchiectasis we performed bronchography in doubtful cases As will be seen later bronchography alone is sometimes the sole means of differentiation between the two conditions

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The function of radiology in the diagnosis of bronchiectasis is to determine the presence of the disease, its character, and its extent These factors can all be accurately revealed by bronchography in the living subject, and by it alone The bronchographic appearances are characteristic and on the whole easy to interpret, the difficulty lies in the selection of cases for bronchography, the request for which is a joint decision of clinician and radiologist and not the responsibility of one alone

The saccular type of bronchiectasis can nearly always be detected on the straight radiogram Multiple cysts, usually accompanied by some degree of collapse and surrounding emphysema, are not likely to be confused with any disease other than a congenital cystic lung, which is regarded by some (Twining 1938) as essentially the same condition If there is partial collapse the affected lobe presents a honeycombed appearance, but in the presence of a complicating pneumonia or complete lobar collapse all trace of the cysts may disappear. There were 9 cases of saccular bronchiectasis in this series, and in only one, where the cystic area was obscured by the heart shadow, was the condition missed on the straight radiogram It is interesting to note the extent of saccular bronchiectasis which is compatible with apparently good health, for in 2 cases the whole of the right lung was involved and in 2 further cases all lobes except one of both lungs were affected In this type of bronchiectasis there is little difficulty in selecting cases for bronchography, for even if the disease is not evident on the straight film the presence of collapse is in itself an indication for this procedure

Cylindrical bronchiectasis and its more advanced "varicose" stage present a far more difficult problem The clinician and radiologist must strike a fine balance between over-anxiety, leading to the performance of many unnecessary bronchographies, and over confidence which allows bronchiectasis to pass unnoticed. Of the 16 cases of cylindrical bronchiectasis in this series, 4 were missed on the straight radiograms, bronchiectasis was suspected in 9 other cases but not confirmed by bronchography A further 16 bronchographies were performed on clinical grounds alone, unsupported by evidence from straight radiograms, and all these proved negative

We estimated that of every 5 bronchographies demanded by the clinician 4 were normal, and in only 1 had the radiologist missed bronchiectasis It is evident, therefore, that a fairly high standard of diagnostic accuracy is possible on straight radiograms alone, but bronchiectasis cannot be definitely excluded without bronchography While saccular bronchiectasis can be diagnosed on the straight radiogram by demonstration of the actual cysts, cylindrical disease is generally recognised by secondary changes in the bronchi and surrounding lung tissue, although the essential bronchial dilatation can sometimes be seen Cylindrical bronchiectasis, in striking contrast to the saccular type which may be extensive, is often confined to one or two bronchial divisions

Normal bronchi cannot usually be recognised beyond the hilar regions unless seen end-on, but they may occasionally be identified in the right cardiophrenic angle In many cases a large artery is seen in the outer part of the right cardiophrenic angle and its continuity can be traced with the vascular trunk at the hilum Just within, and running parallel to it, a large bronchus may be seen whose dilatation is a reliable sign of bronchiectasis. It is important not to confuse the pulmonary veins with the bronchi, the veins pursue a more oblique course upwards and inwards and their shadows are fainter than those of the arteries

Since bronchiectasis is so common in the right middle lobe and in the anterior and posterior basal bronchi, a full appreciation of the anatomical basis of the pulmonary markings in this area is essential The left cardiophrenic area is partially obscured by the heart shadow and it is in this region that bronchiectasis is most often overlooked Bronchial dilatation was confined to this area in 3 of the 4 cases which were missed on the straight radiogram in this series. Exaggeration of the bronchial markings, which makes their detection easier, is in itself a possible sign of cylindrical bronchiectasis, but as the appearance is due to fibrous or inflammatory thickening of the bronchial walls it is not pathognomonic nor an index of the extent of the disease. In some cases small areas of acinar collapse or consolidation occur round the affected bronchi, but this further stage in the inflammatory process, although more obvious, again is not pathognomonic of bronchiectasis. Crowding together and straightening of the bronchi are additional signs of bronchiectasis (Kerley 1938) and can be detected if the bronchial markings are exaggerated. It must be remembered, however, that for every bronchial shadow an arterial shadow is also visible and the crowding may thus be more apparent than real. Enlargement of the hilar shadows was not seen in these cases, possibly because of the low grade of infection present.

A combination of the appearances described suggested the diagnosis of bronchiectasis in 8 cases subsequently confirmed, but these signs also led to bronchography in other cases where no bronchiectasis was demonstrated.

Partial collapse of a lobe or segment of a lobe was present in 4 cases. Although Lee Lander and Davidson (1938) showed that the bronchi of a collapsed lobe were dilated in the presence of negative intrapleural pressure, slight lobar collapse is not always accompanied by bronchial dilatation. Compensatory emphysema develops peripheral to an area of collapse, and the resulting hypertranslucency is a useful sign when the collapse is not obvious (Twining 1938). Localised hypertranslucency of the lung can however appear on deep inspiration at one base without true emphysema; hence it is not conclusive evidence of collapse. Bronchiectasis was present in most of our cases without any accompanying emphysema, but true localised emphysema or collapse are both definite indications for bronchography.

On assembling the clinical and radiological findings, we can distinguish two groups of cases in which bronchography will almost certainly be normal:

1. Cases with pronounced bronchitis and copious sputum at the time of the straight X-ray examination, but showing either no radiological changes or only those of slight bronchial catarrh.

2. Cases which show greatly increased bronchial markings on the straight film but have no clinical findings or past history of chest disease to suggest bronchiectasis. Some other explanation of the radiographic findings must then be sought.

Little need be said of bronchographic appearances. In many of our cases the dilated bronchi extended well below the level of the dome of the diaphragm. Too much reliance must not be placed on absence of alveolar filling as a diagnostic sign of bronchiectasis, since this is often seen in asthmatics and may also be due to faulty posture at bronchography.

SINUS INFECTION IN BRONCHIECTASIS

The association of nasal sinus infection and bronchiectasis has often been noted in America during the last 20 years. Mullin (1921) showed that infection could spread from the nasopharynx and sinuses to the bronchi of rabbits either by direct aspiration or by lymphatics and blood-stream. In man, Quinn and Meyer (1929) and McLaurin (1932) demonstrated that iodised oil could be aspirated from the nares and antra to the bronchi, especially during sleep. It seems clear, therefore, that infected material can pass from infected sinuses to bronchi. The incidence of sinus infection in cases of bronchiectasis is about 70%, judged by findings in the 420 cases summarised below:

	Cases	Infected sinuses Cases	Infected sinuses %
Quinn and Meyer (1929)	38	22	58
Clerf (1934)	200		82
Hodge (1935)	37		75
Boyd (1935)	12	10	83
Goodale (1938)	75	46	61
Chipman and Collins (1939)	58	26	45

There have been many references to the improvement in cases of bronchitis and bronchiectasis after eradication of sinus infection, but no-one has *claimed that* sinus infection is an essential cause of bronchiectasis as distinct from a constant source of reinfection to already affected bronchi. Poorly developed sinuses or complete absence of the frontal sinuses have been described in bronchiectasis, and such congenital abnormalities at the upper end of the respiratory *tract* have been *hailed* as evidence of a congenital cause for the bronchiectasis. We found, however, that absence or poor development of the frontal sinuses was quite common in people with no chest disease.

Of the 25 cases of bronchiectasis the sinuses were X rayed in 17; they were clear in 10 and showed evidence of infection in 7. Of these 7, 6 had bilateral bronchiectasis and both maxillary antra were infected in 5—a finding in accord with that of Clerf (1937) who observed that bronchiectasis is usually bilateral when sinus infection exists. Of the 10 cases with radiologically normal sinuses, 7 had unilateral or unilobar bronchiectasis, and in only 3 was the disease bilateral. Thus the findings of Clerf (1927) and Goodale (1938) are again confirmed: the incidence of sinus infection is lower in cases of unilateral than bilateral bronchiectasis. Lack of radiological evidence does not, of course, preclude past sinus *infection*; some of our cases which gave a history of nasal catarrh had radiologically normal sinuses.

In a control series of 129 gastric cases, sinus infection was found in 56 (43·4%). Our series of bronchiectasis is too small for comparison, but if the control gastric series is compared with the 420 published cases of bronchiectasis quoted above it will be seen that sinus infection was found in approximately 70% of bronchiectasis cases as against 43% in the controls. We consider this to be supporting evidence of the common association of sinus infection and bronchiectasis, but no causal relationship between one condition and the other has yet been definitely established.

TREATMENT, DISPOSAL AND PROGNOSIS

Apart from instruction in postural drainage, and the treatment of infected nasal sinuses, these cases could not be further treated for bronchiectasis at the emergency hospitals in which they were seen. The men were clearly unfit for further military service and could hardly have been made fit for it by lobectomy or pneumonectomy at a thoracic centre; hence they were recommended for discharge from the Army, and in most cases this was effected. On their return to civil life full details were sent to their doctors, in whose hands the question of reference to a thoracic surgeon was left. Bilateral disease or other factors made 16 of the cases unsuitable for surgery. The remaining 9 cases *apparently* had unilobar disease (although the whole bronchial tree was not invariably outlined) and no doubt a lobectomy could have been done in some of these. Such treatment, in the long view, might be desirable in selected cases, but as Roles and Todd (1933) mentioned it is hard *to* advise a severe operation to a patient with little present disability and an uncertain prospect of developing any in the near *future*.

We cannot discuss the prognosis of our cases in particular, but the expectation of life for cases of bronchiectasis in general, as set out in previous papers, may be somewhat pessimistic. Some reports have evidently dealt with the relatively advanced cases seen in teaching hospitals, so that the survival-time after diagnosis bears little or no relation to the actual length of time the disease has existed. Thus Roles and Todd (1933) reported that 23 of 49 cases of bronchiectasis treated medically, were dead and 9 wholly incapacitated within six years of diagnosis. Warner (1935) estimated that 23% of 110 cases died after an average of nine years, while Cookson and Mason (1938) characterised bronchiectasis as a fatal disease. The difficulty in estimating the total duration of bronchiectasis has already been mentioned, but the significance of past chest disease, and of atelectasis in particular (Lee Lander and Davidson 1938), is now better recognised and should lead to earlier diagnosis.

Many of the patients in this series gave histories of chest diseases in childhood which might reasonably have initiated bronchiectasis, yet the men were still apparently fit enough 20 years later to be graded A1 in the Army and to have had little incapacity in civilian life. We do not know whether bronchiectasis of this type ultimately progresses to a fœtid stage with all the classical symptoms and signs, and it is possible that at least some of the patients might—save for bronchography—have passed such inflammatory episodes repeatedly occur in a lung already the seat of bronchiectasis, so that one of them cannot be positively incriminated as the initiating factor unless the patient had had a previous bronchography The difficulty in stating the total duration of bronchiectasis in any of the cases in this series is thus evident If, however, the onset is held to date from one of the many chest diseases during childhood then the orthodox pessimistic outlook can hardly be maintained in view of the patients' present ages and military categories

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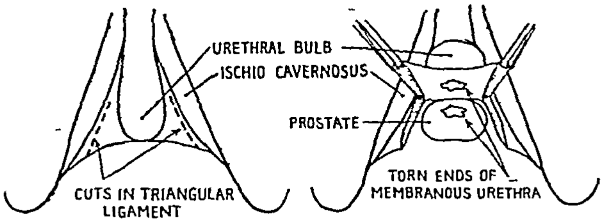
The abdominal and perineal wounds were then closed The bladder was drained by a de Pezzer catheter, and a rubber tube was inserted into the cave of Retzius In the perineum, absolute hæmostasis was secured and the divided structures loosely resutured The incision was completely closed, except for a small piece of corrugated rubber inserted into the subcutaneous layer



Exposure of ruptured membranous urethra

The patient was transfused with three pints of stored blood during the operation and returned to the ward in excellent condition, T 99 5° F, P 95 and R 20 The pelvis was supported with a binder

POSTOPERATIVE COURSE

The patient progressed well, considering the severity of the injury and the extent of the operation There was never cause for anxiety Sulphanilamide was given by mouth, 4 g on the day of the accident, then 5 g daily for three days and then 3 g daily for a further five days The perineal drain was removed on the third day, the wound being dressed with sulphanilamide powder to minimise the risk of introducing infection There was never more than a scanty discharge of blood stained serum and this wound did not become infected Bladder irrigations through the de Pezzer catheter were begun on the seventh day on account of a minor urinary infection The tube draining the cave of Retzius was removed on the eighth day and the stitches of both wounds on the tenth On the fifteenth day the de Pezzer catheter was removed and the urine drained off by suction on an Irving's box On the seventeenth day unsuccessful attempts were made to pass a soft rubber catheter and a Liston sound On the nineteenth day an anæsthetic was given and a no 7 (English) " coude " catheter was passed without obstruction It was tied in for 48 hours with a Duke's apparatus attached The bladder was irrigated every two hours, using boracic lotion Exactly three weeks after the accident the suprapubic wound had closed, and on removal of the penile catheter the patient passed urine naturally and without undue discomfort A sterile specimen taken next day showed the urine to be almost clear, containing but a few pus cells and a little amorphous debris Culture resulted in a very scanty growth of coliform organisms For the next fortnight micturition occurred about two hourly by day and four hourly by night, after that it rapidly settled to normal It has never been necessary to dilate the urethra Gum-elastic bougies have been passed five times, 1, 2, 3, 6 and 15 months after the accident, and their passage has never met with any resistance or resulted in hæmorrhage The largest size passed on each occasion was either a no 13 or a no 14 (English) The external meatus would not admit a size 15 bougie without causing undue pain The pelvic fracture united well For the first three days the pelvis was supported by a simple binder, and then, for five weeks, by a counterbalanced pelvic sling arranged to exert slight compression on the pelvis By the middle of March there was but little limitation of adduction and abduction at the left hip joint, and other movements were full and painless On April 3 the patient walked with crutches without putting his left foot to the ground On April 18, twelve weeks after the accident, he discarded the crutches He walked without pain or limp He returned to work seven months after the accident

He was last seen on April 9, 1942, nearly fifteen months after the accident He was in perfect health and doing heavy work Micturition and sexual functions were normal There was no physical disability Urethral instrumentation showed that there was no stricture

DISCUSSION

These patients are badly shocked, having usually sustained a severe compression or impact injury Treatment of the shock must be thorough and effective to justify the additional risks pertaining to the relatively extensive and long operation for primary repair of the urethra The prospect of a probable reduction in the incidence of stricture formation surely justifies these risks The arrangements in the operating-theatre must be planned and the patient prepared so that two surgeons can operate concurrently yet independently The time taken over the operation is thereby considerably reduced, with corresponding benefit to the patient Care must be taken to ensure that the theatre is well warmed and that as little as possible of the patient is exposed, since the lithotomy-Trendelenburg position spreadeagles the patient more than is desirable

The division of the attachments of the triangular ligament to the ischio-pubic rami allows mobilisation of the membranous urethra (see figure) The cuts in the triangular ligament are short, extended only until the distal end of the torn urethra is just seen when the central part of the triangular ligament is hinged forwards, carrying the bulb with it In this procedure there is a risk of dividing branches of the superficial perineal nerve and artery and of the nerve and artery to the bulb, but it appears from the above case that no permanent damage is sustained Gentle manipulation of the base of the bladder from above enables the torn ends of the urethra to be opposed and sutured The tear, in contrast to ruptures in the bulbous urethra, is usually clean and the anastomosis correspondingly exact Drainage of the perineal wound is therefore unnecessary

A temporary suprapubic cystotomy should be performed in all cases of ruptured membranous urethra, as emphasised by Girling Ball (1938) It is an indispensable step in the operation if primary anastomosis without an indwelling catheter is to be carried out The suprapubic tube should not be removed until the urethra has been given time to heal In the case reported a penile catheter had to be inserted on the nineteenth day for two days before urine would pass naturally In the absence of a stricture, the suprapubic wound may be expected to heal immediately

Infection is the greatest obstacle in all these cases If torn tissues are accurately opposed and infection suppressed a satisfactory result may be anticipated The administration of a sulphonamide compound is therefore obviously desirable In the case recorded, sulphanilamide was administered from the beginning by mouth and the urinary infection was minimal The perineal wound was dressed with the powder and did not become infected

SUMMARY

A case of ruptured membranous urethra is described in which the tear in the urethra was repaired by primary end-to-end anastomosis without an indwelling catheter Suprapubic cystotomy was done Infection was minimised by the administration of sulphanilamide All wounds were healed within three weeks Fifteen months after the accident there is no stricture

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SCHOOL MEDICAL SERVICE ECONOMIES—The Board of Education have again asked local authorities to review their school medical services with a view to securing the most economical use of their staffs The board regard as essential the medical examination of children on admission to school and again in their last year of school life, but they are willing for the examination of the intermediate age group to be temporarily discontinued This arrangement will throw fresh responsibilities on the school nurses who have to keep a vigilant eye on the unexamined children, and the board are anxious that trained women shall no longer be used for such duties as examining the children's heads for nits or as dental attendants through life with no more serious diagnosis than chronic bronchitis A follow-up study of such cases can alone settle the question , but we believe that earlier diagnosis of bronchiectasis will show that the more familiar termination of the disease is not so inevitable as has hitherto been held

SUMMARY

Of 25 cases of bronchiectasis in serving soldiers, most gave a history of pneumonia or other chest disease in early life

Physical signs alone often failed to distinguish between true bronchiectasis and chronic purulent bronchitis Straight radiograms by themselves enabled bronchiectasis to be definitely diagnosed in some cases and suspected or excluded in others Bronchography was essential for demonstrating the exact extent of the disease, even when recognised in the straight film, and for proving the presence or absence of bronchiectasis in doubtful cases

An oral technique for bronchography was preferred to nasal or intratracheal techniques

Bronchiectasis, sometimes gross, was found to be fairly common in patients of apparently healthy appearance and little physical incapacity Such patients are rarely seen in general hospitals in peace-time Their expectation of life may be less gloomy than has been generally assumed

We wish to thank Dr H B Padwick for the use of the X ray films in one case , Dr W Paton Philip, tuberculosis officer for Cambridgeshire, for wise counsel , and Prof J A Ryle for criticism and advice

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COMPLETE RUPTURE OF THE MEMBRANOUS URETHRA

TREATED BY ANASTOMOSIS WITHOUT AN INDWELLING URETHRAL CATHETER

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THE aim in treating a ruptured urethra is to restore continuity without producing a stricture To achieve this result, it is necessary to abide by certain principles

1 To operate as soon as the patient's general condition will allow before the traumatised tissues have become œdematous before extravasation of urine has occurred and before the site of the rupture has become infected The patient is told not to attempt to pass water and is given a sedative It may be necessary to carry out a suprapubic puncture if operation is unavoidably delayed

2 To approximate the torn ends as accurately as possible

3 To prevent urine from passing over the healing wound by suprapubic drainage or proximal catheterisation through undamaged urethra

4 To avoid using an indwelling catheter until healing is complete, Foreign material within the urethra predisposes to infection, and seepage of urine will occur alongside an indwelling catheter even if the main flow is short circuited

5 To minimise the risk of infection by scrupulous asepsis, absolute hæmostasis and the obliteration of dead spaces

6 Later, to avoid the frequent passage of unnecessarily large instruments which would damage the recently healed urethra

When the bulbous urethra is torn, these principles (adapted from Grey Turner 1923) can usually be applied conscientiously The rupture is of easy access and the urine can be successfully short-circuited On the other hand, technical difficulties encourage an exception to be made in cases of rupture of the membranous urethra The torn ends are usually approximated by means of *special indwelling catheters (Harrison 1941)*. The use of these catheters has even been justified by the supposition that "the membranous urethra, unlike the bulbous, shows very little tendency to stricture formation " (Hamilton Bailey 1927–28), a belief not always shared by those who have to carry out the perennial or biannual dilatations necessary in many of these cases However, it is possible to expose the junction of the prostatic urethra and membranous urethra by dividing the lateral attachments of the triangular ligament and hinging the flap thus constructed forwards into the perineal wound On this principle we devised an operation which was carried out in the following case

CASE-REPORT

A post office jointer, aged 24, sustained a comminuted fracture of the pelvis and a complete rupture of the membranous urethra on Jan 26, *1941* A bus skidded into a bomb crater in which he was working, and pinned him down on his right side One of the front wheels crushed in the left side of his pelvis and came to rest on the upper part of his left thigh He was admitted to St Bartholomew's Hospital in a state of great shock There were fractures of both left pubic rami and the acetabulum, which had been driven about 1 cm into the pelvis Blood oozed from the external urinary meatus A tender abdominal swelling developed, rising out of the pelvis, and a hæmatoma appeared in the perineum Operation was carried out four hours after admission, as soon as the patient was sufficiently recovered from the shock

OPERATION

The patient was placed in the lithotomy Trendelenburg position as described by Lloyd Davies (1939), with the hypogastrium, genitalia and the anterior half of the perineum *prepared for operation and isolated as one site*

Abdominal surgeon —A large pelvic hæmatoma was evacuated through a midline suprapubic incision The bladder was partially distended and its wall suffused with blood but not torn The prostate was entirely separate from the triangular ligament, indicating a complete rupture of the membranous urethra A jagged spicule of bone projecting inwards from the left ilio pubic ramus was removed The bladder was opened and a Liston sound was passed in a retrograde direction through the prostatic urethra into the hæmatoma, which was temporarily packed with gauze

Perineal surgeon —A large soft rubber catheter could only be passed 20 cm up to the rupture in the urethra A transverse incision was made just behind the urethral bulb and deepened to expose the tips of the soft rubber catheter and the sound in the hæmatoma The left half of the triangular ligament had been torn free from the fractured pubis at the accident The right half was divided by a cut extending from behind forwards and inwards between the ischio cavernosus and the bulbo cavernosus muscles (see figure) The central part of the triangular ligament was thus left attached only anteriorly, hinged so that its upper abdominal surface could easily be brought into view

Both surgeons —The abdominal surgeon then removed the packing which had been introduced temporarily to allay hæmorrhage and pressed the base of the bladder firmly but *gently down towards the perineum* Using the rubber catheter and the sound as guides, both ends of the torn urethra could be found and approximated by the perineal surgeon An end to end anastomosis was done with nine interrupted fine plain catgut sutures on an atraumatic needle, introduced so that the knots were outside the lumen The three deepest sutures were introduced first, with the triangular ligament hinged forwards, and the guiding instruments withdrawn so *that only* their tips showed The sound was cytosis has been the usual finding Differential white counts in 10 cases showed normal relationship between myeloid and lymphoid cells Multilobed polymorphs exceeded earlier types

Sternal puncture was performed on 6 of our cases, and the findings are given in table I

TABLE I—DIFFERENTIAL OF MARROW CELLS (% OF TOTAL NUCLEATED CELLS)

Case no	7	9	10	15	17
Hæmoglobinised megaloblasts	3	1	0	0	0
Basophilic megaloblasts	16	14	3	4	4
Erythroblasts	4	18	19	20	10 5
Normoblasts	26	4	4	14	20
Total nucleated red cell types	49	37	26	38	34 5
Myeloid leucocytes		49	47	55	58 5
Total leucocytes	39	53	57	59	65 5
Degenerate or unidentified cells	12	10	17	3	0

A full differential count was not performed in case 6 but the ratio of red to white cells was 6 4 with normoblasts showing a well-marked preponderance

TREATMENT

The disease is subject to natural remission at the end of pregnancy so that evaluation of treatment is impossible unless a control period is allowed for spontaneous improvement keeping the patient on a diet poor in the natural sources of extrinsic factor This is often impracticable because many of the patients are dangerously ill on admission to hospital and immediate treatment becomes a necessary life-saving measure If the patient has had a poor diet throughout pregnancy, and especially if a test-meal shows a normal amount of free hydrochloric acid in the gastric juice, lack of extrinsic factor alone may be the cause of the anæmia, and the addition of marmite in ½ oz doses daily to a good mixed diet may produce the desired response We found that marmite was poorly tolerated and often had to be discontinued owing to nausea and vomiting If marmite fails, or the above specified conditions are not present, a pure liver extract such as anahæmin, in doses of 5 c cm intramuscularly every four days, should be given and the response observed We have found that several cases which failed to respond to such measures rapidly improved if comparable doses of a crude extract such as campolon, were given furthermore, cases which failed to respond to either refined or crude extracts showed immediate and dramatic improvement if given ½ lb of raw or lightly cooked liver daily We do not consider that the iron contained in such quantities of liver could produce such an immediate response, and ascribe its potency to a hæmopoietic factor which is lost in the process of extraction

Blood-transfusion should be given only when the hæmoglobin level becomes desperately low It has no specific hæmopoietic property but is fairly well tolerated, it proved a valuable temporary measure in 9 of our 23 cases

The criteria we used to constitute a response were these (1) Subjective sensation of improvement by the

TABLE II—RESPONSE TO TREATMENT

Case	Treatment group	Hb % on admission	Weeks in hospital	Hb % on discharge	Treatment after discharge	Follow up		Remarks
						Time interval	Hb %	
1	1	49	3	67	Occasional iron	4 mth	81	Spontaneous remission
2	1	54	2	74	Nil	6 mth	90	Had iron before admission
3	2	35	4	52	Nil	4½ yr	106	15 days on controlled diet, then response to marmite
4	,,	35	1	48	No record	5 days	54	Campolon 5 c cm on discharge
5	,,	52	2	58	'Campolon' 5 c cm per month	16 mth	88	At first improved on normal diet later needed crude extract
6	,,	39	4	60	Iron	1 yr	95	Now cannot tolerate iron , Hb falling with low C I
7	,,	16	4	63	Nil	18 mth	94	Transfusion 1 pint and 10 c cm pure extract no response , then vit B rich diet, immediate improvement
8		17	3	53	'Marmite'	2 mth	72	Transfusion 1 pint then marmite
9	3	26	3	58	Iron	9 mth	89	Hb stationary for control period then rose with 10 c cm anahæmin — iron
10		22	5	67	Anahæmin for 1 yr , then iron only	2 yr	80	Transfusion 22 oz
11	4	15	3	46	One dose 5 c cm campolon	6 mth	67	52 % reticulocytosis
12	,,	17	4	60	Nil	10 mth	79	One injection only 5 c cm
13	,,	28	3	47	Nil	5 yr	100	15 c cm crude extract in hospital
14		12	5	40	Iron only	3 yr	87	Transfusion 3½ oz
15	,,	12	5	47	Occasional iron	3 yr	100	Transfusion 1 pint 10 c cm crude extract
16	,,	16	4	52	Anahæmin 5 c cm per fortnight 5 doses , also campolon	5 yr	63	Low CI but cannot tolerate iron Subsequent normal pregnancy anæmia being forestalled by campolon 5 c cm twice weekly
17	,,	19	3	48	No record			5 pints blood prior to D & C
18		9	4	50	Raw liver and 'Bemax	1 mth	80	2½ pints of blood — pure extract no response , crude extract + raw liver, 33 % retics
19	5	25	4	60	Raw liver	10 days	81	1 pint blood then ½ lb liver daily
20	,,	33	3	48	No record			20 c cm crude extract Hb 32–29 % , rapid response to liver
21		15	5	62	Liver unobtainable, so campolon 5 c cm per fortnight	2 mth	76	No response to extracts
22	,,	25	6	56	Marmite	7 mth	90	Hb fell to 19 % with 9 oz blood + crude extract 35 % reticulocytosis to raw liver
23		17	3	46		Still in hospital		Hb fell to 11 % with pure extract cells of 1 pint of blood + raw liver, 34 % reticulocytes

PERNICIOUS ANÆMIA OF PREGNANCY

A STUDY OF 23 CASES

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ALTHOUGH pernicious anæmia of pregnancy was first described by Osler[1] in 1919 and is the subject of an excellent review by Stevenson,[2] textbooks of medicine continue to give unsatisfactory and even contradictory accounts of the disease We here report 23 cases, seen in this hospital during the last five years Few of them were suspected by the outside doctors, and in many cases the patient was permitted to become dangerously ill before investigation and treatment were carried out The disease is a macrocytic hyperchromic anæmia occurring late in pregnancy or in the puerperium It differs from pernicious anæmia in that there is not necessarily achlorhydria, the prognosis for complete cure is better, and subacute combined degeneration does not occur

ANALYSIS OF CASES

In this analysis 3 doubtful cases (one of which died) have been excluded

Age —Range 22–41 yr , average 31 , 18 out of 23 were under 35 yr During the same period of five years 222 females with true pernicious anæmia were admitted to the ward , their ages ranged from 16 to 77, and only 12 were under 35 yr Three pernicious anæmia patients became pregnant, and the doses of liver extract had to be increased to an average of 5 c cm per week to keep their blood at satisfactory levels Two had full term, normal deliveries, the third is now 6 months pregnant It should be noted that patients with uncomplicated pernicious anæmia are not normally admitted from the outpatient department unless the anæmia is severe

Parity —Four cases were seen in primiparæ, and one was an 11-para Average parity was 4 One case subsequently became pregnant again 3½ years after the attack, but recurrence of symptoms was forestalled and the hæmoglobin kept above 60% by intramuscular 'Campolon' therapy throughout pregnancy In 20 cases the infants were healthy , 2 cases were associated with stillbirth, and one with twins In one case the child showed moderate non-deficiency anæmia (Hb 64% with colour-index 0 73), but no abnormality was found in other cases where the child's blood was examined

Family history —One case had a sister with true pernicious anæmia , 5 cases had vague family history of "anæmia"

Past history of "anæmia" was vague and unsatisfactory but considered relevant in 5 cases

Diet —All the cases recorded are of "hospital" class, many from poor surroundings Of the 19 with a proper dietary history, 7 had gross deficiency of both protein and vitamin content Of the 12 cases in which the diet appeared to have been adequate, vomiting was severe and long-continued in 7 , 4 of the remaining 5 cases in this group had an excellent dietary history and no apparent digestive upset or failure of absorption One factor in some cases was that, as œdema and vomiting were frequent early symptoms of the disease, this was aggravated by the imposition of a protein-free diet for supposed toxæmia A factor in two cases was total dental extraction at mid-term which restricted diet to slops and caused a definite secondary dietary deficiency In none of the 23 cases, however, were there either associated polyneuritis or other gross signs of any vitamin deficiency

Serum protein was estimated in 5 cases and yielded values ranging from 5 12 to 6 3% Serum calcium in 6 cases showed figures from 9 5 to 10 5 mg per 100 c cm

The individual readings bore no apparent relation to the dietary history in these cases

Symptoms —Patients when first seen here were already in the puerperium, but symptoms had begun as early as the 3rd month, and as late as 3 weeks after delivery The average onset of symptoms was around the 7th month Severe hæmorrhage had occurred in only one case

Symptoms	Cases	Symptoms	Cases
Pallor	23	Œdema of legs	8
Jaundice	5	Paræsthesiæ	3
Breathlessness Tiredness	22	Severe, prolonged vomiting	11
Sore tongue	13	Mild diarrhœa	2

Sore tongue is usually an early, and often transient or recurrent symptom , its significance is often overlooked Œdema was related to low hæmoglobin levels rather than to lowering of serum proteins

EXAMINATION AND INVESTIGATION

Pyrexia was usual and many cases reached hospital a few days after delivery with the diagnosis of puerperal sepsis

Under treatment pyrexia lasted an average of 10 days, and was usually about 100° to 101° F It bore no constant relation to hæmoglobin level, disappearing in one case when this reached 16% and in another not until 56% was reached Two cases were apyrexial, having hæmoglobin levels of 33% and 54% on admission One case with temperature of 104° F was complicated by cystitis

Nervous system —Retinal hæmorrhage was present in 10 of the 21 cases observed , the average hæmoglobin in these cases was 20% Vibration sense and deep reflexes were normal in all cases

Alimentary system —Actual glossitis was present in 2 cases In most, the tongue was smooth and pale with atrophy of the papillæ The spleen was palpable in 3 cases, the liver enlarged in 4

Histamine test-meal —Three cases showed histamine refractory achlorhydria , 7 cases showed hypochlorhydria , 11 cases had normal hydrochloric acid in the gastric juice There was no relation between defect in diet and presence of free hydrochloric acid , in treatment, however, it will be seen that those cases which responded to 'Marmite' had free hydrochloric acid present with a history of poor diet during pregnancy

Gastroscopy was performed in 2 cases One showed an atrophic, the other a normal, gastric mucosa

Stools were examined for ova in 7 cases and were normal in all So also was ratio of split to unsplit fats

Occult-blood test was negative in all cases

Cardiovascular system —Systolic apical murmurs were present in 11 cases One case had a mitral presystolic murmur, due to associated mitral stenosis

Albuminuria was present in 8 cases, but as these were not catheter specimens it is of doubtful significance, owing to contamination with lochia

BLOOD EXAMINATION

The red-cell and hæmoglobin findings were as follows

Red cells per c mm (millions)	Cases	Hæmoglobin Hb % (Sahli)	Cases
0 –0 5	1	0–10	1
0 5–1 0	11	10–20	11
1 0–1 5	7	20–30	4
1 5–2 0	1	30–40	4
2 0–3 0	3	40–60	3

Colour-index ranged from 0 98 to 1 4 Average was 1 13 During treatment reversal of colour-index occurred in 6 cases, who all required iron to supplement liver therapy Average reticulocytes were 3% , one case had 10% reticulocytes but had been having iron from her doctor before admission The mean corpuscular volume varied from 96 7 cu microns to 157 cu microns with an average of 110 cu microns Blood films showed well marked anisocytosis with poikilocytosis, microcytosis and megalocytosis and diffuse polychromasia A Price-Jones curve was performed on one patient only, showing slight shift to right Although several of the blood films conveyed the impression of spherocytosis this was never definitely proved by correlation of MCD and MCV Red-cell fragility was estimated in 9 cases , in 3 there was insignificant increase in fragility , 6 cases showed excessive urobilinuria by Schlesinger's test Van den Bergh reactions in all cases were positive indirect , average bilirubin was 1 9 units Wassermann reaction was done in 6 cases , it was negative in all

White blood-cells ranged from 12,200 to 1300 per c mm with an average of 5200 Leucocytosis of 15,000 commonly occurs after normal delivery, so there appears to be a definite leucopenia , in most other series leucoto it in a concentration of 10–15% in true solution We conclude that since sulphanilamide is sufficiently soluble to exert a direct damaging effect on nerve it should be used with caution at operations in which peripheral nerve trunks are exposed

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SUMMARY

We have shown that the sciatic nerve of the rabbit is not capable of withstanding saturated solutions of sulphanilamide indefinitely without undergoing interruption of the nerve-fibres and Wallerian degeneration

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INOPERABLE GASTRIC CANCER

TREATMENT WITH RADON SEEDS

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THE stomach is one of the commonest organs to be affected by cancer and the management of gastric cancer is an important surgical problem An improvement in the survival-rate of patients with the disease will follow advances in the early diagnosis Many patients still present themselves for treatment at a stage when radical surgical extirpation is impossible I investigated a series of 187 consecutive patients and found that in 77% the disease was so advanced that only palliative treatment was possible The only hope for the patient lies in radical surgical excision during the early phases, the operation being either partial or total gastrectomy with removal of the regional lymphatics The operative mortality will diminish as a result of advances now being made in the management of patients undergoing operations, and with increasing knowledge of the biochemical factors influencing nutrition and improvements in surgical technique Recently, for example, the operation of transthoracic resection of cancer of the cardiac end of the stomach involving the œsophagus has developed considerably

This paper discusses the management of the large group of patients in whom the disease is advanced The method of treatment described has been found to relieve symptoms and in many cases to prolong the lives of patients who are unsuitable for gastrectomy In most of the patients treated in this way the growth was in the proximal half of the stomach, where the bulky, vascular variety of tumour, growing into the cavity of the stomach but late in invading the regional lymphatics and other structures, is common Some neoplasms in this region are radiosensitive

The first patient to be treated with radium was reported by Wickham and Degrais (1914), gastrojejunostomy was performed and radium inserted in the neoplasm which regressed, the patient surviving for 18 months Janeway (1918) reported much amelioration of symptoms in 7 patients In succeeding years a number of observers reported benefit as the result of irradiation In some patients the tumour was irradiated from internal and external sources Schmidt (1928) reported that a patient survived 3 years after irradiation, Holfelder (1931) noted that one patient lived 2½ years and another one year Gosset, Monod and Regaud (1933) reported the results in 31 patients and stated that one patient survived 6½ years, another $2\frac{9}{12}$ and 3 others a year or more Pack and his colleagues (1935) reviewed the results of treatment of 60 patients and reported one patient alive after 3 years, 2 alive at 2 years, and considerable palliation of symptoms in several others Pack and McNeer (1939) studied the results in 268 patients and found that 5% benefited considerably and that symptoms were relieved in 20%

TECHNIQUE OF INTERSTITIAL IRRADIATION

In the development of the technique described I have had the help of Prof W V Mayneord in the physical side of the work After surgical exposure the size and shape of the neoplasm is carefully measured, and from graphical data the amount of radon required is estimated by the physicist in attendance at the operation, he will also indicate the most appropriate theoretical sites for the implantation of radon seeds

When the lesion is in the proximal half of the stomach a left paramedian incision is advisable An adequate exposure is essential and the site, size, shape and extensions are determined so that a correct assessment of the number of radon seeds required can be made Souttar's radon-seed introducer is pushed obliquely through an area of normal stomach wall near the lesion, and radon seeds are inserted around the growing edge of the carcinoma When the growth involves the cardiac orifice care is taken to ensure that seeds are inserted in this area Seeds are also inserted uniformly throughout the body of the tumour 1 cm apart It is necessary to re-insert the radon-seed introducer through different points in the stomach wall in order to reach the various areas of the tumour For growths approximately 12 cm by 10 cm in size 30 radon seeds of 2 millecuries each are required to secure uniform irradiation When the radon seeds have been inserted, the abdomen is closed in layers without drainage A plain X-ray picture is taken of the stomach as soon as possible to determine the position of the radon seeds

Owing to the anatomical position of the stomach and the close proximity of other vital organs, irradiation here is attended by greater dangers than is the case with the breast, mouth, and cervix uteri After irradiation of the upper abdomen, radiation sickness is common A moderate fever may develop owing to the increase of local infection in the neoplasm but it subsides quickly The blood-picture may show secondary anæmia and sometimes severe leucopenia Leakage of stomach contents through the puncture holes made by the radon-seed introducer may give rise to acute diffuse peritonitis, but this risk is minimised if the introducer is inserted at an acute angle to the stomach wall so that the sero-muscular coat is penetrated obliquely for some distance Radionecrosis with extensive sloughing of the neoplasm may develop immediately or several weeks later, and sloughing of the neoplasm may lead to hæmorrhage from the stomach or perforation into the peritoneal cavity

RESULTS

During the years 1936–41 inclusive 34 patients were treated by the method described They were suffering from inoperable cancer of the stomach, and surgical extirpation was impossible The periods of survival after treatment were as follows

Survival (months)	Under 1	1–3	4–6	7–9	10–12	13–18	19–24	25–36
No of patients	5	12	8	6	0	1	1	1

Of the whole series, 2 are still alive, one treated 3 years ago and the other 7 months ago The results must not be assessed entirely by the period of survival although in certain cases life is definitely prolonged It is reasonable to suppose that almost all these patients would have died within 3 months without treatment owing to the advanced stage of the disease Palliation of symptoms was achieved in many, thus there may be relief of pain and vomiting, improvement in general health and an increase in weight and strength, often the appetite returns When the growth has invaded the cardiac orifice causing dysphagia this symptom may either diminish or disappear In one patient gastrostomy had been performed in another hospital for complete dysphagia, but after irradiation swallowing became normal and the gastrostomy was allowed to close

SUMMARY

Treatment of inoperable cancer of the stomach by irradiation with interstitial radon-seed implantation is described

Of 34 patients with an expectation of life of 3 months, 2 are still surviving, one 3 years and one 7 months after treatment, 3 of the whole series survived for more than a year, 14 survived between 4 and 9 months, and 17 died within 3 months of treatment

The method prolongs life and ameliorates symptoms in many patients

patient, often the first sign (2) Reticulocyte response within a week, 15 cases showed over 10% reticulocytosis, this response bore no constant relationship to initially low hæmoglobin or red-cell levels (3) A sustained rise in hæmoglobin

Our cases may thus be grouped under five headings

1 Spontaneous remission on diet poor in extrinsic factor *Two cases*

2 Response to normal diet, sometimes with marmite added These patients had dietary inadequacy and free hydrochloric acid in their gastric juice *Six cases*

3 Response to refined liver extract injections *Two cases*

4 Response to crude liver extract injections *Eight cases*

5 Response to raw liver *Five cases*

Of the 17 cases in which a follow-up of over six months is possible (see table II), 8 are well with no treatment, 6 are well with no treatment except iron to combat secondary hypochromic anæmia, 3 require regular doses of campolon

SUMMARY

Of 23 cases of pernicious anæmia of pregnancy all responded to specific therapy, which could subsequently be discontinued in 14 cases

Dietary deficiency and vomiting are important ætiological factors

Free hydrochloric acid was present in the gastric juice in 18 cases, in such cases marmite added to a good mixed diet may be sufficient treatment Where there is achlorhydria or where marmite fails a response may be obtained from injections of either a refined or a crude liver extract, or failing these liver by mouth

Some degree of iron deficiency often becomes apparent during therapy

We wish to thank Surgeon Commander C C Ungley, RNVR, without whose records and suggestions this paper could not have been written, and Prof F J Nattrass and Dr J C Spence for permission to use their case records

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LOCAL APPLICATION OF SULPHANILAMIDE TO PERIPHERAL NERVES

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Local damage to a nerve trunk has much more serious consequences than local injuries to other tissues, such as muscle, granulation tissue or fascia If the axons are interrupted the nerve degenerates throughout its peripheral extent, and the lesion can be repaired only by the slow formation of new fibres by outgrowth from the nerve above the lesion As nerve paralyses have often been reported after the systemic use of sulphonamides, it seems likely that the toxic effect of these drugs on nerve would be even more definite when they are used locally In a short series of experiments in which we have tested, under severe conditions, the toxic action of sulphanilamide locally applied to the sciatic nerve of the rabbit, we have found that large applications of the drug may cause functional interruption of the nerve and wallerian degeneration

METHOD

The sciatic nerve of the animal was exposed by an incision from the head of the femur to the knee, and finely powdered sterile sulphanilamide was packed along the nerve below the biceps muscle The nerve itself was not touched, and it remained protected by a fascial layer The animals were divided into two series, those in the first receiving a 1 g application, the others 2 g The weights of the animals ranged between 1 kg and 2 5 kg, but the relationship between the amount of drug used and the weight of the animal cannot be very significant, the most important factors are the amount of drug used and the area of tissue over which it is scattered In each experiment the nerve and surrounding muscle was covered over a length of some 4 cm

The animals were tested for sensory and motor disturbance within 24 hours of the operation Those treated with an application of 2 g were found to be insensitive to pinprick over the whole of the foot on the operated side, and they had lost the power to spread the toes, an action mediated by the peroneal nerve The animals treated with 1 g of sulphanilamide showed no such functional disturbance Specimens of nerve were removed from animals in both series for histological examination 15 days after the application The peroneal and tibial nerves at the site of application and the posterior nerve from the shank were fixed in formol saline and divided up, some of the pieces being mordanted with potassium dichromate before embedding, and others embedded directly in wax Transverse and longitudinal sections were cut, the mordanted material being stained by Weigert's method for myelin, and the rest stained with silver by a method to demonstrate axons (Holmes 1942) and counter stained with trichrome stains

RESULTS

The nerves from the animals which had received the smaller application showed no significant pathological change In those of the 2 g series, however, both the axons and myelin sheaths were degenerate at the site of application The type of degeneration differed from that seen after simple section of a nerve in that macrophages and Schwann cells were much less abundant, and removal of the myelin and axon remains was not proceeding normally. Proximal to the region of application the fibres seemed normal, and the axons were sending out regenerative sprouts into the damaged portion of the nerve Distally the posterior tibial nerve contained no intact fibres, and wallerian degeneration with Schwann cell proliferation and macrophage invasion was proceeding normally The blood-vessels of the nerve trunk at the site of application were considerably damaged, there had been rupture of their walls, and extensive hæmorrhage into the tissue and lymph spaces of the epineurium and between the nerve-fibres themselves

These experiments show that when acting for a sufficient time at saturation strength in the body fluids, sulphanilamide is capable of destroying nerve fibres and probably of interfering with the activity of Schwann cells Since Schwann cells play an important part in the reformation of new myelinated fibres in regeneration, we allowed one animal of the 2 g series to survive for 60 days after the application, to see whether regeneration was seriously delayed by the injury to the Schwann cells, but histological examination of the nerves after this length of time showed that the nerve at the site of application and the posterior tibial nerve were full of large regenerated myelinated fibres It seemed that regeneration had been as rapid and successful as possible, and that recovery would probably be excellent since the injury was a true "lesion in continuity," the axons and myelin being interrupted but the endoneurial tubes remaining intact

DISCUSSION

The effect of sulphanilamide in these experiments cannot have been due to the non-specific irritation set up by the undissolved powder in the wound site (Taylor 1942), because the reaction within the nerve trunk could only have been brought about by the sulphanilamide which diffused through the epineurial sheath in true solution. Sulphanilamide is not sufficiently soluble to exert a high osmotic pressure, it is neutral, and it is not surface-active Its toxic effect is therefore in all probability specific The fact that the nerve trunk can withstand as much as 1 g of the drug packed into the thigh space—that is, it withstands a saturated or nearly saturated solution for as long as it takes 1 g to be dissolved away—shows that the toxic effect is feeble On the other hand, the fact that it cannot withstand 2 g applied under similar conditions shows that the toxicity under unfavourable circumstances may be significant This is in accord with many clinical observations and with tissue-culture and other in-vitro tests (Bricker and Graham 1939, Fleming 1938, Osgood 1938, Jacoby, Medawar, and Willmer 1941, Bick 1942)

The test described is of course a severe one The operation site is clean and bloodless, and normal nerve is not as richly vascular as, for example, graft beds from which it is known that sulphanilamide is transported too rapidly to exert any appreciable damaging effect (Colebrook and Francis 1941) It should be pointed out that a test of this sort could hardly be expected to yield an indicative result with drugs which are much more soluble than sulphanilamide, such as *penicillin* For any chemical compound will be lethal to living cells exposed

THE LANCET

LONDON SATURDAY, SEPTEMBER 19, 1942

ANÆMIA IN PREGNANCY

BOTH here and in India anæmia in pregnancy has been coming in for attention lately. Here the increased incidence under war conditions is responsible; in India the problem is always present and on a large scale. Here microcytic is far commoner than macrocytic anæmia; in India the macrocytic types are much more prominent. The factors involved also vary—in this country insufficient iron in the diet is the main cause; in India there are many other causes, such as hookworm infestation and malaria, though dietary deficiency also plays an important part. LUCY WILLS[1] drew attention to this dietetic factor and suggested that the anæmia of pregnancy seen in India was a variety of the tropical macrocytic anæmia associated with dietary deficiency; she showed that her cases improved on treatment with 'Marmite'—a yeast product rich in vitamin-B complex—in the same way as non-pregnant patients. NAPIER and EDWARDS[2] in India investigated 467 cases of pregnancy anæmia and compared them with groups of 128 non-pregnant and 64 pregnant normal controls; patients with other causes for anæmia were excluded. Iron-deficiency was found to be very common and probably a factor in all cases, whatever the type of anæmia; their severe cases were all macrocytic, and though they agreed that nutritional defects played a part they thought that other factors must also be taken into account. They noted that if the child was born prematurely the anæmia began to improve soon after labour; many of their patients had enlarged liver and spleen, increased bilirubin in the serum and a reticulocytosis, which they consider indicate an over-active reticulo endothelium—possibly the result of chronic malaria. Finally, quite a high percentage of their patients had positive Wassermann reactions. Their theory is that pregnancy anæmia is a "conditioned toxæmia." MUDALIAR and MENON[3] of Madras reported on 103 cases of macrocytic anæmia and reached some different conclusions. In their opinion Indian and European pregnancy anæmias are similar; they got poor results from marmite, but good results from intramuscular liver therapy, whether crude or purified, and cases occurred among well-to-do classes whose diets were adequate. They conclude that deficiency of intrinsic factor (hæmopoietin) is important. The immense variety of conditions in India makes it difficult to assess these varying reports, but it is at least clear that severe anæmia requiring thorough treatment with all known hæmatinic factors is a live problem in India. None of the reported studies include examinations of bone-marrow; this omission ought to be repaired in future work and may help with classification.

By contrast, the home problem is simple. There are three main types of pregnancy anæmia here: microcytic iron-deficiency anæmia, pernicious anæmia of pregnancy, and a remaining small group of severe anæmias sometimes described as "hæmolytic" and sometimes as "refractory." The last two have had plenty of publicity because they are often severe and may be fatal, but numerically and socially the microcytic type is far more important—it is common, and although hardly ever fatal is responsible for a great deal of poor health and inefficiency before and after labour. Lately LESCHER[4] described 17 cases of severe anæmia and his records illustrate the difficulty in distinguishing between the pernicious anæmia patients, for whom treatment with parenteral liver extract is often strikingly successful, and the hæmolytic-refractory group for whom repeated blood-transfusion is the only treatment. The blood-picture gives little help; free acid is often present in the gastric juice of the pernicious-type patients, hyperbilirubinæmia may occur in either, reticulocytosis may help in the hæmolytic cases but is absent in the refractory ones. The clue may be provided by sternal puncture: if the characteristic megaloblasts are present the case is one for liver treatment, if they are absent—even though the marrow contains numerous primitive erythroblasts of other types—transfusion should be begun without delay. In other words, the criteria are the same as those laid down by ISRAELS[5] for anæmia in general and, as in non-pregnant patients, rare cases with megaloblastic marrow do occur which prove partially or completely refractory to liver treatment and need transfusion; DAVIDSON, DAVIS and INNES[6] have recorded examples. The group of 23 cases studied by MILLER and STUDDERT in Newcastle-on-Tyne, and discussed in this issue, is especially interesting because many of them had deficient diets. A state of affairs corresponding more to Indian conditions was found; some patients responded to diet alone or diet plus marmite, others who failed to respond to purified liver extracts responded satisfactorily to cruder ones. They examined the sternal marrow in 5 cases and found it megaloblastic in all.

The macrocytic anæmias of pregnancy have received disproportionate attention because of their severity and the problems involved. The microcytic anæmia is relatively simple; it is easy to diagnose—typical low colour-index anæmia—and most cases respond to proper iron treatment. It must be nearly 100% preventible, yet it is on the increase. The reason is hardly obscure. HAMILTON and WRIGHT[7] reported on 392 cases seen in London between May, 1941, and March, 1942; initial hæmoglobin values were 75–79% Haldane; iron treatment during the pregnancy increased the hæmoglobin, but when iron was withheld there was a further fall in the hæmoglobin of about 10%. In their view women of the artisan class are more anæmic than before the war, so that when they become pregnant they are at a disadvantage from the start. MACKAY, WILLS and others,[8] who examined women between September, 1941 and January 1942, remarked on the disquieting increase of anæmia among them. The report of the People's League of Health[9] showed that just *before* the war the

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Possible complications are radiation sickness, pyrexia due to infection of the tumour, anæmia, leucopenia, peritonitis due to leakage of stomach contents, hæmorrhage, sloughing of the tumour, or perforation of the stomach

I wish to thank Mr Cecil Joll and Mr Reginald Ledlie for allowing me to include patients in this series who were under their care at the Royal Cancer Hospital

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Reviews of Books

The Discipline of Peace

K E Barlow, MRCS London Faber and Faber Pp 214 8*s* 6*d*

By a paradox of civilisation, it is only when least can be done about it that man realises fully how dependent he is upon the fertility of the earth Many thought that the lesson of the last war had been learned for all time—that mankind would never slip back into the money-grubbing, machine-aided system under which the soil was exploited by the industrialist, and robbed of all it could yield without repayment The penalties of the system were there for all to see, the " dust-bowl " of the Middle West was a demonstration of the result of exploiting nature Rob the *soil of its natural vegetation, cart away all the new* growth of food the cleared region can produce, deplete the soil of its organic matter, lay it open to the wind and the rain, and in a few short years you have a desert Nature left alone achieves an equilibrium in which growth and decay balance, man can disturb that equilibrium without peril only if he has an understanding of the complex adjustment This is the central theme of Dr Barlow's book The gospel has been preached before, notably by Jacks and Whyte in *The Rape of the Earth*, but perhaps never with such vehemence As a physician he sees the danger to the community of blind interference in nature's system and his " discipline of peace " is the fitting of man's activities into the discipline of nature, to make an integrated whole in which man is a part of his own environment as well as that of the plants and animals on whose continued multiplication his existence depends The author has a social philosophy to preach—a philosophy based admittedly on that of Eddington but developed along the lines of biological thought, recognising the need for the integration of man and nature Without that integration Dr Barlow sees only self-destruction for the human race

Year Book of Pathology and Immunology

Editors H T Karsner, MD, S B Hooker, MD Chicago Year Book Publishers, London H K Lewis Pp 623 16*s* 6*d*

The busy pathologist with little time to read, or to abstract what he does read, will find in this yearbook a most useful cross-section of current developments in these fields The well-summarised abstracts are arranged in sections under the various systems for pathology, and under specific bacterial infections for immunology, there are shorter sections on bacteriology, allergy, antigens and antibodies, chemotherapy, and a particularly good summary on iso-immunisation and its relation to transfusion reactions and erythroblastosis fœtalis In the pathology section, which is well illustrated, emphasis is laid on ætiological factors in the genesis of disease processes good examples are Foulds's views on the histogenesis of cancer, Muir's work on the evolution of mammary cancer, Virgil Moon on morphological changes in shock, and the various factors contributing to hypertension The result is to stimulate thought on these pathological processes Among the infections, attention is mainly focused on those which are most prevalent or associated particularly with war, although more of the recent work on gas gangrene and typhus might have been noticed There are short sections on new technical methods

Preclamptic and Eclamptic Toxemia of Pregnancy

Lewis Dexter, MD, research fellow in medicine, Harvard Medical School, Soma Weiss, MD, Hersey professor of the theory and practice of physic, Harvard University Boston Little, Brown and Co Pp 415

In this exhaustive book, written from a non-obstetric point of view, the late Prof Soma Weiss and his fellow physician, Dr Dexter, had a *twofold purpose* description and interpretation of their own work, and summary and analysis of a vast bibliography which they sifted with commendable thoroughness They missed little that has been written on this subject in the last decade and for reference alone the work is valuable They approached the subject from a purely physiological point of view, and to establish what is normal they investigated a series of non-toxic pregnant women From this they passed to the pathological and experimental The whole book is a careful if mainly negative piece of work, and helps to clarify confused issues by placing the problem on a proper footing, without raising any new theories it gives material for evaluating old ones The work is well illustrated by microphotographs and diagrams It is not a book for students, but should be read by any physician *and obstetrician who is interested in the toxæmias* or who is called on to treat such cases

Race, Reason and Rubbish

Gunnar Dahlberg, MD, LLD, director of the State Institute of Human Genetics, University of Uppsala London George Allen and Unwin Pp 240 8*s* 6*d*

Professor Dahlberg's eminence as a geneticist gives authority to this lucid and dispassionately critical guide, and it is a pity that its title suggests a different tone and temper from that of the text As he points out in the preface, political discussion about the rightness or wrongness of scientific principles and conclusions is repugnant to the scientist It is however important that the public should have knowledge about human heredity as about other scientific matters that affect man's well being It is particularly necessary at a time when spurious genetic doctrines have been used to justify the savage persecution of innocent people, compulsory sterilisation on a large scale, and militant nationalism It is in the last two of his twelve chapters that Professor Dahlberg examines the racial question, especially in its application to the Jews, his sober review of the data doubtless suffices to get his book banned, if not burnt, in Germany The main chapters are devoted to the discussion of gene linkage, modes of inheritance, mutation, sex determination and linkage, mating and selection, inbreeding, cousin marriage and other special problems receive attention The style is straightforward and simple, yet dogmatic over-simplification, so tempting to the writer of popular manuals, is consistently avoided

First Aid for the Home Guard

R Morris Jones, MB Lpool, DPH, MO to a Home Guard battalion London Practical Press Pp 46 2*s*

This condensed and simplified course of first-aid training, based on larger textbooks, and modified by Dr Morris Jones's practical experience, accepts the possibility that Home Guard casualties, especially in the country, may be cut off for hours or days from the skilled attention of a doctor or of the staff at a civil defence service post It therefore proposes a comparatively high standard of training, and includes, for example, the application of the Thomas splint This splint is *not available for* Home Guards in the ordinary course of things but it might be possible to obtain one from the nearest military or civil post, and in any case there should be one with any ambulance coming to collect the wounded Presumably an ambulance will turn up sooner or later so that skill in applying this splint will not be wasted A large number of booklets have now been published by HG medical officers and they embody views which differ to a surprising degree, neither officially nor otherwise is there any agreement as to what constitutes first aid, or what methods are best for treating particular casualties Thus Dr Morris Jones makes a short reply to those who may criticise his advocacy of tannic acid in the treatment of burns, he need scarcely have troubled to do so, for his views are at least as valid as those of anybody else In spite of minor defects this is an able and useful booklet litmus, so as to minimise this danger It is still more important to maintain a large fluid intake for the same purpose Another toxic symptom which can apparently be effectively suppressed is the cyanosis which sometimes appears Admittedly this symptom is more spectacular than dangerous When it occurs, it can be removed by the oral or intravenous administration of methylene-blue ZIERZ[14] found that if 10 c cm of a 1% solution of methylene-blue is injected intravenously, the cyanosis and the subjective symptoms all disappear in 15–30 minutes, alternatively 200 mg may be given by mouth and the cyanosis will be removed in 3–4 hours Excretion of methylene-blue continues in the urine for 6 days Thionin can be used in the same way If the cyanosis is causing alarm to the patient's friends this seems to be a simple, safe and effective way of making the outlook seem less blue

Attempts have been made to influence the toxicity or the activity of sulphonamides by modifying the diet In the early days of this therapy it was thought that the toxicity—particularly the tendency to cyanosis—was increased by the presence in the diet of eggs or onions, or by giving the patient aspirin or phenacetin More recent opinion, such as that of FAIRLEY[15] denies the need for these restrictions on diet or treatment In particular, since eggs are such a valuable food in illness, it is important to recognise that they can safely be used during sulphonamide therapy A different aspect of the problem is presented in several recent American papers ROSENTHAL[16] has lately demonstrated that the therapeutic activity of sulphanilamide, tested in mice infected with streptococci, is less if the mice are fed on a high protein diet than if they are given a carbohydrate one, this seemed to be due to a lowering of the blood concentration of the compound on the high protein diet Similarly SMITH, LILLIE and STOHLMAN[17] have shown that a high protein diet diminishes the susceptibility of rats to the toxic effects of sulphanilamide Therefore a high protein diet reduces both the activity and the toxicity of the compound STOHLMAN and SMITH[18] find that in fasting rabbits given sulphanilamide by mouth excretion in the urine is delayed and consequently the blood concentration is raised, compared with normally fed rabbits The differences observed are not large enough to be of clinical importance, but they indicate the need for standardising the dietary conditions of laboratory animals used for testing these compounds

THE WOMEN'S SERVICES

THE admirable report which has just been issued by Miss VIOLET MARKHAM's committee (see p 343) will bring comfort to many parents and ease the anxieties occasioned by unfriendly rumours, most of which have little or no foundation in fact The report is critical but sympathetic It describes a great task carried out with imagination and foresight Mistakes and blunders have been made, this was inevitable in the hasty building up of new services under war conditions They may well be forgotten in looking at a picture of ever-increasing usefulness and efficiency The call to the Forces has brought together thousands of young women from all sorts of homes, many of whom would never otherwise have had the opportunity of familiar association with girls differently brought up This mingling of classes is a great social experiment, it gives a chance to create a better understanding and a broader outlook among women Different ideas of personal hygiene and different table manners are obvious difficulties in community life The discipline of give and take, of learning to do as you would be done by, is new to many but none the less wholesome The report wisely stresses the importance of looking to the future and making the fullest use of the means offered by Service life of improving not only health but character, and of training not only for immediate duties but for work under the difficult circumstances of a post-war world Perhaps the most disappointing finding the committee make is the lack of interest shown in education and in reading, which so far seem to have failed to arouse any enthusiasm except among the few Facilities are not yet fully organised It is to be hoped that it will be possible to expand them on the lines suggested so that to many of these women education may indeed become " a great adventure " and the gateway to those wider opportunities which we want them to enjoy in days to come, and for others will at least abolish much of the boredom and monotony which is so fertile a source of trouble

The well-being of the women under her command is described as the primary duty of the officer It is satisfactory to note that health is in general extremely good and that the life leads to an improvement in physique, poise and self-confidence as well as in mental stability No softness is looked for women must be prepared to rough it if the exigencies of the service demand this, but a minimum of " Spartan decency " must be granted if health and morale are to be preserved, this includes reasonably comfortable accommodation, cleanliness, warmth good food and medical attention The officer and the doctor are both concerned with various matters of personal and general hygiene, and can be mutually helpful The medical care of large groups of healthy women is a task for which women doctors are well suited and the report calls for an increase in the number of those already employed They are notably required in the reception stations for WRNS and in each Naval Command where none have yet been appointed Hitherto medical women have striven in vain to induce the Admiralty to make such appointments More women gynæcologists are needed, especially in stations, so that the women can have ready access to them It is interesting to note that the more active the occupation the less menstrual disturbance there is likely to be, perhaps this observation may finally explode the legend of feminine incapacity for strenuous work because of periodic disability due to menstruation The experimental work in the ATS and the WAAF in mass radiography of the chest is of special interest in view of the susceptibility of young women to tuberculous infection and the possibility of an increased mortality under war conditions The doctor's duties may not offer extensive opportunity for clinical treatment, but they do include all that is necessary for an invaluable experiment in social medicine, and for implanting that desire for health iron intake of 98% of the London women investigated was insufficient With the restriction of iron-containing foods, especially meat, that the war has forced on us the situation has certainly worsened and increased incidence of anæmia is the result The Ministry of Food has shown commendable concern for potential and nursing mothers, but to provide extra milk and not enough iron is like filling up a car with petrol but omitting to charge the batteries Such a policy fails to take into consideration the increased need for iron in pregnancy, which **Balfour**, **Hahn** and others[10] have recently shown varies from 2 to 10 times normal Only a super-optimist could think that the feeding of our women is likely to be any better during the coming winter To close this gap in our nutritional armour and to prevent the ill health that even mild degrees of anæmia bring with them will require the cooperation of all the bodies responsible for the health and nutrition of the people If all pregnant women had antenatal medical supervision prevention would be easy, but they don't, so other methods must be used The Ministry of Food could consider an increased meat as well as milk ration—the suggestion[8] of iron-fortified milk would be difficult to carry out The Ministry of Health could see that all antenatal clinics are alive to this problem and that adequate supplies of active iron preparations are available for their use The doctor who has pregnant women in his care should regard every one of them as a potential anæmia case and treat accordingly with iron—no liver treatment is called for unless a firm diagnosis of pernicious anæmia of pregnancy is made If these measures are taken in time, before the winter is on us, pregnancy anæmia, instead of increasing, ought to be reduced to practically nil and all the potentially severe cases could be caught early This is a job worth doing thoroughly

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MODIFYING THE TOXICITY OF SULPHONAMIDES

Many attempts have been made to discover some way of reducing the toxicity of sulphonamides which often handicaps their therapeutic use When poisonous substances are introduced into the circulation the body usually tries to render them innocuous by conjugating them with other compounds to form less toxic combinations, this conjugation may be preceded by either oxidation or reduction The compounds used to form these combinations are aminoacetic acid, choline, cystine, glucuronic acid, glutamine, sulphates, acetates and ornithine In the case of sulphonamides the major part of the detoxifying process consists of conjugation with acetates to form the acetyl derivative which is then excreted in the urine **James**[11] found that in mice the proportion of sulphanilamide which thus became acetylated could be increased by giving sodium acetate with the drug, the acute toxicity of the drug was thus somewhat reduced while its curative action against streptococci seemed to be unchanged There is one paradoxical aspect of this work, however—that acetylsulphanilamide is more toxic for mice than sulphanilamide itself

Lately a group of American workers[12] have found that the mortality of mice receiving toxic doses sulphanilamide, sodium sulphapyridine or sodium sulphathiazole can be reduced by 40% if the mice simultaneously receive calcium glucuronate, ascorbic acid, or a mixture of these with cysteine, glutamic acid and aminoacetic acid A large range of other compounds were relatively or completely inactive Sodium acetate diminished the mortality by 20%, The therapeutic activity of the sulphonamides seemed to be undiminished, but this is impossible to measure accurately The detoxifying action of the various compounds was not due to delay in the absorption of sulphanilamide from the alimentary canal, since in dogs it was found that they actually accelerated absorption At first sight this work offers a promising method of diminishing the toxicity of sulphonamides in clinical practice, but second considerations indicate the need for caution In the first place the theoretical conceptions on which this procedure is based contain an important inconsistency While it is probable that the toxicity of a drug may be reduced by hastening its conjugation with detoxifying compounds, it is equally to be expected that the therapeutic activity would be diminished to the same extent Failure to observe this diminution of therapeutic activity may easily be due to the difficulty of measuring it with any degree of accuracy **Martin** and his colleagues do not present the actual experimental data from which their conclusions are drawn, so that it is impossible to assess the true weight of their evidence, and the diminution of toxicity which they observe is relatively slight A more important obstacle to the clinical application of this work is the difference in the bases for the acute toxicity of sulphonamides in mice and for the chronic toxicity which they may cause in man Thus the acute toxicity of mice seems to be associated with acidosis and with effects on the central nervous system In man, on the other hand, the most important toxic effects are agranulocytosis, renal obstruction, skin rashes and vomiting, while those due to the nervous system are seldom serious It will therefore be advisable to wait for more conclusive evidence to be produced before expecting to reduce the clinical toxicity of sulphonamides by these methods

There is a possibility of diminishing or avoiding some of the toxic complications by other less ambitious procedures, directed against a single specific complication rather than against the general toxicity Thus one of the most serious sequelæ to sulphonamide therapy is anuria due to blockage of the renal tubules or ureters by the less soluble acetyl derivative Although this is practically unknown with sulphanilamide, it is not uncommon after sulphapyridine, sulphathiazole and sulphadiazine Many workers have shown that both sulphonamides and their acetyl derivatives are more soluble in alkaline than in acid urine, and **Climenko**, **Barlow** and **Wright**[13] have given a striking demonstration of how the simultaneous administration of sodium bicarbonate protects the kidneys of monkeys from the injury which would otherwise follow heavy dosage with sulphathiazole When sulphapyridine, sulphathiazole or sulphadiazine is given clinically there is good reason for giving sufficient bicarbonate to keep the urine alkaline to ponent of blast probably plays a primary part in the causation of these blast injuries It is difficult to reconcile this view with that derived from observations made with actual explosions Zuckerman and his collaborators[1] have reported experiments which show that blast injures the body not by way of the mouth and nose but primarily as a result of the impact of the pressure component of the wave on the body wall When animals were placed so close to small explosions that the near side shielded the opposite side from the impact of the positive component, lesions were always concentrated on the side nearest to the explosion, although both sides were subjected equally to the suction phase In other experiments blast lesions were observed when animals were exposed to the pressure component of blast alone Moreover, as reported by Rex Williams in his Hunterian lecture, typical blast lesions occur as a result of under-water explosions, in which the suction component is of far shorter duration than that of blast in air—of such short duration in fact that for practical purposes it is usually regarded as non-existent It seems probable, therefore, that the conditions of Latner's experiments were not sufficiently related to those of a true explosion to justify the conclusion he has drawn He gives no measurements of the duration of the decompression to which his animals were subjected, and it is difficult to see how the duration could have been as short as that of the suction component of blast While they do not appear to relate strictly to the question of blast, however, his experiments obviously have a bearing on the important aviation physiology problem of explosive decompression

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EHRLICH AND ZIEHL NEELSEN

FEW tests in clinical pathology have withstood the ravages of time so long as the fuchsin acid-fast method of staining the tubercle bacillus We are accustomed nowadays to refer to it as the Ziehl-Neelsen technique, but, as Prof W Bulloch pointed out, the stain as we know it today is primarily the invention of Ehrlich, the modifications of Ziehl and Neelsen being trivial Many attempts have been made to improve its technique but the fundamental principle and practice are still unchanged The two directions in which modifications have usually been suggested have been the substitution of a less potent decolorising fluid for the sulphuric acid, or the use of a less intense counterstain which does not obscure the fuchsin stained bacilli Sulphuric acid substitutes came into vogue again during the last war on the grounds of economy The counterstains have a still longer history, Carl Spengler many years ago introduced picric acid and later A D Gardner showed how easy it was to miss the red-stained bacilli on the deep blue background of methylene blue in the strength in which it is generally used Colour contrast is of course essential and as some degree of red-green colour blindness is by no means infrequent in the male it might be prudent to avoid green as a counterstain Yellow and brown have the advantage over blue that they do not overstain but the disadvantage that the colour contrast is less vivid J E Pottenger[2] has returned to the quest with a host of suggestions and modifications, though even he leaves the foundations of the stain unassailed He begins by increasing the amount of basic fuchsin in the stain from the usual 1% to 1·2% or 1 5% With a series of 70 sputa he found he could raise the efficiency by this means up to 46%, controlling the intensity of the staining meanwhile by placing a small film of a known positive on the same slide as the specimen under investigation He found too that by treating carefully standardised films with different counterstains and with no counterstain at all he could grade the efficiency of a light or dark background for the bacilli in the following order of merit picric acid, no counterstain, methylene-blue 1/150%, malachite green 0 02%, Bismarck brown 0 05%, malachite green ½ saturated, Bismarck brown 1%, methylene-blue 0 1%, and methylene-blue 1% The last, therefore, which is perhaps the commonest counterstain in use, is the worst He brought out other subsidiary points in the classical acid-fast staining technique for the tubercle bacillus, and finally issued a questionnaire to 23 institutions on the subject, setting forth their answers in a separate paper From these the cardinal fact stands out that, though most workers adhere to the standard carbol-fuchsin stain, useful modifications can be applied, and will increase the proportion of positive tests without adding to the labour of technicians in the daily routine of the laboratory—a point which is not always sufficiently appreciated by research workers who do not deal with thousands of tests per annum

RAT-BITE FEVER

THE general belief has been and probably still is that *Spirillum minus* is the cause of rat-bite fever, but cases also occur from which *Streptobacillus moniliformis* can be isolated Japanese workers have always stressed the spirillar ætiology since the organism was first described as a spirochæte by Futaki[1] in 1916, its name being changed to spirillum in 1924 However, Schottmüller[2] in 1914 described two strains of streptothrix isolated from patients bitten by a rat and a squirrel, and several workers have since isolated similar organisms Most of these were probably what is known as *Sb moniliformis* and is now more readily isolated on the special medium which has been devised for its growth In 1933 Strangeways[3] showed that *Sb moniliformis* was apparently a normal inhabitant of the nasopharynx in 50% of laboratory rats and she also found it in four wild rats This is a striking contrast to the unsuccessful attempts to demonstrate the spirillum in the mouths of rats Though recent reliable data are not available from Japan, in England and the United States this infection seems to be much commoner in rats than *S minus* In reviewing all the cases that have been reported in the USA Brown and Nunemaker[4] note that of 9 cases in 1939 and 1940 an alleged ætiological agent was isolated in 5, *S minus* once and *Sb moniliformis* four times Recently Larson[5] has reported 3 cases of rat bite fever from one of which *S minus* was obtained by animal inoculation, *Sb moniliformis* was obtained from a second and was also considered the ætiological agent by agglutination only in a third Brown and Nunemaker have described 3 cases from which they have isolated the streptobacillus and 5 in which the presumptive diagnosis was made on agglutination tests Like all previous investigators they have failed to find both the spirillum and the streptobacillus in the same case Though the spirillum has been the only agent isolated by the Japanese from their cases of sodoku they have reported clinically typical spirillum-negative cases which may have been caused by the streptobacillus The last cases described in this country were 2 in 1936,[6] both following cat-bite, and from only one was the spirillum isolated Brown and Nunemaker point out an obvious overlapping of the main clinical features of the two types of infection (leucocytosis, rash, relapsing fever positive serological test for syphilis, response to arsenical therapy and arthritis) The clinical picture produced by the natural infection is fairly typical The initial wound usually heals without signs of local inflammation One to three weeks later an area of purplish induration appears at the site of the bite, usually without suppuration Lymphangitis and

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[1] *Lancet* 1940 ii 219 1942, i 252
[2] *Amer Rev Tuberc*, 1942 45, 549, 558, 568

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[1] Futaki, K, Takaki I Taniguchi T and Osumi S *J exp Med* 1971, 25 53
[2] Schottmüller, H *Dermat W schr* suppl 1914 58 77
[3] Strangeways W J *J Path Bact* 1933 37 45
[4] Brown T M and Nunemaker J C *Bull Johns Hopk Hosp* 1942, 70, 201
[5] Larson C L *Publ Rep Wash* 1941 56, 1961
[6] Cole A F *Brit med J* 1936, i, 638, Laverick, J V *Ibid* p 639

about which we hear so much Not all doctors can teach, but those who can should be able to give great practical assistance both to officers and to the rank and file in handling such difficult matters as venereal disease, sex behaviour, and emotional problems Arrangements for dealing with maternity patients are not adequate As far as they go they are humane and efficient, but there is not enough provision for the confinement itself, for the weeks before and after, or for the residential care of small children There are substantial numbers of married women with the Forces, and it is for them as well as for the single girls, comparatively few in number, that better facilities are needed Many have no homes of their own or relatives who can receive them This is, in the words of the report, a national and not a service problem The country has required the work of many young married women who would normally be living at home It is due to them and to their husbands that every care should be taken of them during and after pregnancy, and that suitable and acceptable arrangements should be made for the confinement and for the care of their children if they wish to return to duty

The nation owes an unquestionable debt to its girls and women They are carrying a heavy burden, only justified by a desperate emergency We have taken them away from their homes, parted them from friends and children, completely altered their social habits But we have also given many of them a wholly fresh outlook on life, new and exciting jobs, the chance to show that they can make good in all sorts of unfamiliar occupations They have adapted themselves readily to new tasks hitherto deemed unsuitable for women and often involving physical danger They have shown great aptitude for delicate manipulation and an unexpected enjoyment of heavy work If we safeguard their mental and physical health, develop their character by the kind of education which will stimulate their intelligence and give them the ambition to use and not waste their often excellent brains, much will have been done not only to repay the debt but to ensure the active partnership of women in shaping the new world

NUPERCAINE AND PROCAINE

To avoid future confusion Messrs Ciba have decided to discard the trade name ‘ Percaine ’ and substitute for it the name ‘ Nupercaine ’ by which this local anæsthetic is known in America The name of the ointment containing the drug will similarly be changed from ‘ Percainal ’ to ‘ Nupercainal ’ The change should draw attention to the fact that this is a proprietary drug commonly used in $\frac{1}{2}$ to 1 per thousand dilution and in a dosage of up to 100 c cm for infiltration anæsthesia, whereas procaine is used for the same purpose in a dilution of $\frac{1}{2}$ to 1 per cent and in a dosage of up to 200 c cm Even now there may be muddles if every surgeon refers to procaine by the trade name of his favourite brand Lately Raymond Green (*Lancet*, Aug 22, p 231) urged makers of endocrine products to market them simply as œstrone (Smith), progesterone (Jones) and so on It would be a blessing to both prescribers and dispensers of local anæsthetics if makers of procaine would relegate their brand names to second place and market their products as procaine (Smith) or procaine (Jones)

TRAINING FOR CHILDBIRTH —The sentence dealing with instrumental interference in a leader last week (p 312) should read Among the primiparæ it varied from 23% to 50%

Annotations

VILLAGE EPIDEMIOLOGY

It is not surprising that many Milroy lecturers of recent years have dealt with the effects on health of industry and of the factors producing disease and incapacity for work among town dwellers The lecturer for 1942 [1] has swung back for his material to the countryside, taking as his subject epidemic disease in English village life in peace and war Lecturer and subject were well chosen, for Pickles of Aysgarth not only know English village life, as many other doctors do, but ha brought to his everyday work during 30 years of country practice a flair for accurate observation and sufficient tenacity of purpose to record what he found, so that over the years his experience has not become woolly or been lost, as experience of the kind is apt to be, but is still available as a library of information on epidemiology and clinical medicine and on the whole province of human biology This is his plea “ I should like to make a strong appeal to country doctors to use their opportunities and to keep diligent records preferably in chart form and I firmly believe that, given even a small number of chart-keepers pooling facts, much would be learnt about the behaviour of epidemics and much vagueness in the knowledge of method of spread, of the subclinical case and the rôle of carriers would disappear ’ These lectures breathe the spirit of the countryside, and it is easy to visualise with the author the cheerful, high spirited bus loads of country folk exchanging jokes and germs, as they make their pilgrimages from the Wensleydale villages to market or to cinema in country towns One can imagine that Pickles knows them all—their families, their stock, their merits and their human failings , Betty, the rather sick little bridesmaid who was taking mumps the remarkable family with the susceptibility to acute rheumatism and mitral stenosis, the pathetic little fellow of 40 (since died of a tuberculous kidney) the origin of whose attack of epidemic jaundice could not be placed until his faithless sister gave away his nightly pilgrimage to help the infected Margaret with her household duties From such material Pickles has crystallised his views “ From a study of the literature and my own experience, it seems clear to me that there is only one form of non spirochætal jaundice in this country and that it is remarkably true to type The disease appears to be transferred from patient to patient by direct contact, probably by droplet infection ” There are stories of outbreaks of influenza and scarlet fever of measles, of german measles, of chickenpox and shingles, of epidemic myalgia and of diphtheria, and particularly of the success attending early efforts to protect the children of the Dales against diphtheria , for he believes that it should be the duty and pleasure of all family doctors to be satisfied that the children they see growing up around them are immune to diphtheria There is a tail-piece about the effects of war on village life, about the incoming of evacuees with its minor trials but comparative freedom from serious epidemic disease and the recorded belief that in the end the mingling of incomers with the native population has proved to be for the good of both

CAUSATION OF BLAST INJURIES

In the experiments reported in our last issue (p 303) by A L Latner, mice were suddenly decompressed by opening a tap between a large exhausted chamber and a small one in which the animals were breathing at normal atmospheric pressure As a result of this explosive decompression a pathological syndrome developed which was in general similar to that caused by blast, but in which abdominal changes appear to have been more extensive Latner’s conclusion is that the suction com recently treated 50 cases of functional uterine bleeding with antimenorrhagic factor in the form of 'Glanules' (Armour), the dosage employed varying with the severity of the hæmorrhage Patients who were actually bleeding when examined were usually given two glanules three times a day and this dosage was persisted in until the hæmorrhage stopped Patients who menstruated regularly but lost excessively at the periods received one or two glanules three times daily during the week preceding the menstrual flow Treatment was always persisted in for at least three months The results are encouraging, 46 out of the 50 cases were followed through, in 28 a complete cure was obtained in 4 the condition was so much improved that further treatment was deemed unnecessary, and 14 cases only were classed as failures Unfortunately the endometrium was examined microscopically in only 13 cases of this series It would be interesting to investigate the coagulability of the blood in patients before and during a course of treatment with antimenorrhagic factor

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[1] Abridgment reprinted from the *Leeds Univ Med Soc Magazine*

Special Articles

THE WOMEN'S SERVICES

THE nation is responsible for the women it has called into the Services and they are of vital importance because, as the committee appointed to inquire into their welfare bluntly reminds us, the auxiliaries of today are the wives and mothers of tomorrow The wider implications of the committee's sensible and sensitive report[1] is discussed on another page, but the section on health and hygiene is of outstanding interest to the doctor The committee urges that the three Services should keep uniform health records, for we are being given a unique opportunity to collect data about the health of normal women On the whole the committee found the health of the women good, even the first month's training brings improvement in physique, poise and self-confidence Entry to the services is through the doorway of medical examination by medical boards set up by the Ministry of Labour Where possible one member is a woman doctor and the boards are in touch with local authorities The women are put into four grades of which the WRNS accept only grade I and the other services grades I and II The error in selection is said to be under 1 per 1000 in the ATS and WAAF At the reception centres the women are again examined for infectious diseases and head infestation and in the ATS and WAAF, by mass radiography The ATS carry out selective intelligence tests before the medical board examination and those in the lowest grade—about 5%—are rejected forthwith The committee thinks this system should be adopted by the other two services At present a psychiatrist examines WAAF recruits who score less than 15 on the GVK test at the reception centre and those who are diagnosed as subnormal are discharged Recruits to the WRNS bring personal references, but are given no intelligence tests

As in industry the sickness rates for women in the Services are about twice as high as those for men The special ailments of women account for some of this increase, but it is noteworthy that the greatest incidence of sickness, including menstrual disorders, occurs among the women who are doing the less active duties Medical attendance hospital and dental treatment have been planned with care, but in practice individual delays are inevitable in a system where the sick have to report at a fixed time and place MOs visit billets when a woman is too ill to attend sick parade The amount of dental treatment needed is a revelation The committee was uneasy about the treatment of minor ailments Women in distant billets are said sometimes not to receive prompt attention and mistakes have been alleged in diagnosis and treatment The committee has no reason to believe that inattentiveness or lack of skill are common, but they have received a number of these complaints and urge commanding officers to see that rules are strictly enforced The committee is also concerned over the catering arrangements for girls who are allowed to stay in their own quarters with a temporary indisposition They are served with the ordinary daily ration, although sausage and mash and rolypoly pudding for instance are unsuitable for anyone with a sick headache Girls are also said to have to get up to fetch their food Regular medical inspection parades have reduced the incidence of nits to less than 2% as compared with 25% among control civilian groups, but it is still high at some reception centres

The numbers and distribution of doctors and beds seem adequate, but there should be more women gynæcologists especially on stations The Army and Navy medical services have women on their directorates and a similar appointment is to be made for the RAF The committee recommends that the WRNS should post women MOs to large reception and training centres and that the other services should increase their establishments at these centres The RAF have lately instituted at smaller sick quarters a combined post of a nurse and health welfare sister who acts with acceptance as health confidante to the women The RAF medical branch is now replacing about half of its male nursing orderlies with women, and the committee thinks these women should, if they wish, be given an opportunity to train for the nursing profession Wise and clear instructions on the care of the body, cleanliness and diet are given to recruits and there is a special lecture on personal hygiene, which in the WAAF also deals with pregnancy and venereal disease The committee heard this lecture which was given by a woman doctor and though they approved of its matter, they were not satisfied that it should be given to a large audience of recruits of all ages They suggest that a lecture agreed between the medical and educational branches on the wider implications of sex behaviour should be given to auxiliaries and that training courses for officers should include discussions initiated by outside lecturers on personal relations, the psychology of sex and the sociological implications of the family

Personnel suffering from neurological and psychiatric disorders are treated in appropriate Service hospitals and consultants are available Unstable women are referred to a Service psychiatrist who can recommend their discharge where adaptation to service life is proving too difficult The incidence of psychosis in the ATS and WAAF amounts to 0 64 per 1000 (in civilians 0 85 per 1000) and these figures relate to a period before intelligence tests were in use

Illegitimate pregnancy is almost certainly less common in the Services than out of them, but many married women become pregnant Among single ATS personnel the pregnancy rate is 15 4 per 1000 a year in the same age-groups among civilians the illegitimate birth-rate is 21 8 The care of these expectant mothers is humane and efficient There is a discharge depot for those requiring emergency accommodation for a limited period where they are put in touch with voluntary societies who help them to make arrangements for their confinement and future Facilities have so far been adequate but the situation is becoming more difficult The committee dubs this a national not a Service problem and urges the Ministry of Health to make grants to local authorities and voluntary associations for the care of pregnant women and to provide more maternity and convalescent homes and residential nurseries for the children of mothers who wish to return to the Forces

Figures show that the incidence of venereal disease among Service women is half that among the men and the committee was impressed by its low incidence Arrangements for diagnosis and treatment are adequate, but more women MOs might be employed in the gynæcological wards of the hospitals

Hours of work are on the whole not excessive, but the committee deprecates the Service policy of arranging watches with irregular hours of duty in order to get longer free periods, which they suspect must be injurious to health For continuous shift work the committee considers periods of a fortnight between change-overs would allow adaptation to the rhythm of waking and sleeping They also recommend a maximum 8-hour day and 48-hour week and the introduction of adequate rest pauses regional lymphadenitis develop and the patient has fever After several days there is a remission of the fever and inflammation of the wound lasting 3–6 days followed by a second bout of fever and increased inflammation This process may be repeated several times and is usually accompanied by a rash Severe muscle pains and occasional joint pains are usually a feature of some stage of the disease Some cases subside spontaneously but others go on for months Response to treatment with one of the antisyphilitic arsenicals is dramatic and complete Proof of the clinical diagnosis may be obtained by inoculating the patient's blood, lymph gland from the region involved or a piece of the excised wound into guineapigs and mice shown not to be harbouring any spiral micro organisms, and by culture on the special solid and liquid media[4 7] essential for the growth of the streptobacillus Recent experimental work on the treatment with gold salts of streptobacillary and the related pleuropneumonia group infection in mice and rats suggests that this may be the most effective treatment for this type of case The streptobacillus may also *cause an epidemic disease* unassociated with rat-bite, the so called Haverhill fever[8] In one such epidemic involving 86 people the infection was traced to unpasteurised milk or ice cream from one dairy After an incubation period of one to three days there was an abrupt onset with chill, headache, vomiting, a blotchy maculopapular rash and arthritis The *arthritis*, which was *the* most persistent symptom, is also seen in the cases produced by rat bite and was present in a quarter of the patients inoculated with the *S minus* by Hershfield[9] as a treatment for paresis Savoor and Lewthwaite[10] have demonstrated a well-marked rise in *Proteus XK* agglutinins in rabbits inoculated with three human and two murine strains of *S minus* isolated in guineapigs These strains, which were proved to be uncontaminated with *Proteus OXK* bacilli, gave a higher titre in the rabbit than did *Rickettsia tsutsugamushi* However, in 3 men and 4 monkeys infected experimentally with *S minus* the Weil Felix reaction remained negative Their evidence suggested that there is an OXK component in *S minus* unconnected with rickettsia in general It is significant that Felix[11] found agglutinins or relatively high titres for one or the other X type in the sera of normal tame rats, probably due to infection with *S minus* It would be interesting to know if *Sb moniliformis* has the same effect

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[1] Report of the Committee on Amenities and Welfare Conditions in the Three Women's Services Cond 6384 H M Stationery Office 1s The committee which was appointed on Feb 24 1942 consisted of Miss Violet Markham (chairman) Miss Thelma Cazalet, MP Mrs Walter Elliot Major J Milner, MP Air Vice Marshal Sir David Munro MB, Mrs J L Stocks Dr Edith Summerskill MP, and Major General Sir Frederick Sykes, MP The secretary was Mrs A C M Gulland

THE GALL-BLADDER AND THE HEART

How many surgeons have operated on patients with coronary disease in the belief that they had lesions of their gall-bladders, and how many cardiologists have diagnosed coronary disease when the gall-bladder was primarily at fault? The confusion was considerable at one time and feeling ran high Today, though the association is generally recognised it is still often difficult to differentiate between the two, or, if both are present, to decide whether surgery is indicated for the diseased gall bladder That lesions in the gall-bladder or the main biliary ducts affect the coronary circulation reflexly has been confirmed by Gilbert, Fenn and LeRoy,[12] who had already demonstrated the effect of gastric distension on the coronary circulation Gilbert and Sheridan have also shown in the decerebrate dog that there is a reduction in the coronary flow on distension of the gall bladder or distension or irritation of its ducts—a reflex which does not appear after the *administration of atropine* Ravdin, Royster and Sanders[13] report 4 cases of gall bladder disease with cardiac complications relieved by surgery In 2 of these patients they reproduced an almost exact simulation of the original anginal attacks by distension of the common bile duct postoperatively In one patient they found at operation a thick, kinked common duct, plastered with adhesions and containing some "sand" They freed the duct of adhesions irrigated freely and left a T-tube in situ The patient obtained immediate relief from her attacks of precordial pain On several occasions after operation, experimental raising of the pressure in the common duct to 450–500 mm of water produced an anginoid attack Similar results were obtained in the other patient and here relief was obtained by the administration of amyl nitrite when the common duct pressure had been raised to 400 mm of water The experimental evidence is impressive, but one of the difficulties in assessing its clinical significance is the refusal of many observers to differentiate between substernal and precordial pain Only substernal *pain can be taken* as definitely diagnostic of angina pectoris, many other conditions, both cardiac and functional, must be excluded before a definite diagnosis of angina pectoris is justified when the pain is precordial This is well illustrated by Ravdin and his colleagues, who report "precordial pain (radiating) through to the back and down the ulnar aspect of the *left arm to the finger tips*" *and* "*recurrent* attacks of pain in the left side of the chest under the left breast" These may well have been attacks of angina pectoris, but it would have been clearer to describe the pain as substernal if that actually was the site of it In differentiating cardiac and biliary pain it is essential to take a careful history, this, with a full examination, will usually settle the issue Whether surgery is called for can only be decided on the merits of each case A major abdominal operation should be avoided unless it is decided that the primary cardiac damage is of less moment than the lesion of the gall bladder or main biliary ducts, or that recovery from coronary or myocardial damage is being hindered by the biliary lesion Atropine in these cases will give relief and reduce reflex stimulation of the coronary vessels to a minimum The surgeon should remember that all existing evidence shows that lesions of the biliary tract can only produce cardiac symptoms when the coronary vessels are diseased

THE ANTIMENORRHAGIC FACTOR

A SIMPLE clinical observation provided the stimulus for investigations into the antimenorrhagic factor It was noticed that when anæmic women who complained of uterine hæmorrhage were treated with liver extract not only did their anæmia improve but the hæmorrhage which had produced the anæmia often stopped also Only the cruder forms of liver extract possessed this property of stopping uterine bleeding, when the more refined types were used the *hæmorrhage was* uninfluenced Wiles and Maurer[14] came to the conclusion that since the actual purification of liver extract was not likely to destroy any of its constituents the antihæmorrhagic factor must have been removed in the process Inactive proteins and lipoids constitute most of the discarded material and it seemed that the antihæmorrhagic factor *must* be *contained in* these substances Wiles and Maurer therefore worked on beef and hog liver fat They saponified this in alcoholic potash for an hour and obtained an orange non saponifiable residue which was found to be remarkably *effective in checking* functional uterine hæmorrhage Better results were obtained in young women than in those near the menopause, and in young women the substance was said to have a cumulative effect Sutherland[15] has

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[7] Klieneberger E *J Path Bact* 1936 42, 587

[8] Place, E H and Sutton L E *Arch intern Med* 1934, 54, 659

[9] Hershfield, A S, Kibler, O A Colby S Koenig, M T, Schmid, O W and Saunders A M *J Amer med Ass* 1929, 92, 772

[10] Savoor, S R and Lewthwaite, R *Brit J exp Path* 1941, 22, 274

[11] Felix, A *Trans R Soc trop med Hyg* 1933, 27, 147

[12] Gilbert, N C *Bull N Y Acad Med* 1942, 18, 83, Gilbert, N C, Fenn G K and LeRoy, G V *J Amer med Ass* 1940, 115 1962

[13] Ravdin, I S, Royster, H P and Sanders G B *Ann Surg* 1942, 115, 1055

[14] Wiles, H O and Maurer S *Science*, 1939 89 293

[15] Sutherland, A M *J Obstet Gynæc* 1942, 49 156

rotas This amendment was lost, but a more moderate amendment, moved by Dr C W Somerville (Lothians) and sponsored by seven other divisions, was carried This proposed that in any reorganisation of general practice as full a measure as possible of free choice of doctor and patient should be preserved

GROUP PRACTICE

The chair moved on behalf of a large number of divisions that group practice should be a feature of any future medical service Group practice was defined here as referring to general practitioner practice only Dr Geoffrey Priestman (Bradford) moved an amendment that it should be "a feature but not an essential feature" of any future medical practice Dr Craig believed that every body of medical men should have a form of group practice, but he was against letting any Government department choose the set of men he should work with Group practice like marriage must be founded on affection, not on force Dr William Yeoman also feared the danger of incompatibility, but Dr Philip Inwald was more robust about it all He remembered that when he was a student he had worked happily with his colleagues as part of a team, and he thought it time for qualified men to begin working together in well-equipped centres Dr S Wand said that if group practice was good for the patient then we must have it Dr C F T Scott pointed out that in partnerships we already had a form of group practice Moreover the team of partners had access to consultant and X-ray services in the hospitals Would health centres—which somehow suggested to him pill-boxes (presumably in the military rather than the pharmaceutical sense)—have the equipment now available in a hospital? It would be extravagant to equip them with X-ray plant, for example, unless expert radiography and interpretation could also be provided Dr W W Fox said bluntly that if doctors working together could do better than doctors working alone, then the profession must support the principle of group practice The amendment was lost, and the original motion in favour of group practice was carried, modified by the provisions that it should not involve the introduction of supervisory control in clinical matters and that the groups should not be formed arbitrarily by any outside authority, they should be arranged by the doctors themselves Speaking on the last point Sir Kaye Le Fleming said that to his mind the whole report drew too much attention to the measures to be introduced by somebody else somewhen and somehow We could as a profession bring about reforms of our own before they were forced on us from outside

MEDICAL CARE FOR ALL?

Speaking to a motion that provision of whatever character should be made by the Government for the whole community, Mr H J McCurrich (Brighton) remarked that if benefit was extended to the dependants of all insured patients only 10% of the population would be excluded To administer such a scheme there would have to be 12 clerks for every doctor, and the capitation fee would vanish in expenses Dr A T Rogers was also in favour of the motion, if the meeting disagreed, he said, they would be retaining the right to exploit those outside the scheme and to give less than the best service to the remaining 90% Treating rich hypochondriacs took up time which the doctor could spend to better advantage on his panel patients Dr Inwald pointed out that in Russia and Scandinavia the Government was responsible for the service to the whole community, and the health of the people had not suffered Because a complete scheme was provided, he said, there was no reason to forbid people who wished from seeking private medical care Dr H S Pasmore feared the Government might interpret the motion as a request for a state medical service At this point the meeting caught the full flavour of Dr Rogers's red herring and several speakers explained warmly how much better they treated their panel than their private patients Sir Kaye Le Fleming changed the scent by remarking that no Government was going to introduce a revolutionary scheme for the whole nation which would mean scrapping all existing machinery Dr Fox asked how it could be a revolution if the machinery for 90% of the community already existed? He added the unusual ætiological flight that Sir Kaye's red herring had been drawn across the path in order to give the meeting a myopic eye Dr D F Whitaker said that comparable arguments had been used against National Health Insurance thirty years ago, yet no responsible body had ever asked for its repeal We should try to give equality of opportunity in medical service Those in favour of the motion, he noted, were the younger members who were going to have to work the scheme Dr Wand pointed out that if 90% were covered, treatment would still be available for all, and Dr Arthur ventured to remind the meeting that there was no scheme yet to cover even 90% If the Government brought in the dependants of insured persons, he said, it would be a long step in evolution, and to give free treatment to those who could afford to pay for it was not giving equality of opportunity Mr McCurrich could not see that to extend medical care to the whole community was any more of a revolution than to extend education to all children By a close vote—94 to 92—the motion was carried

Mr M S Fraser (Cumberland) proposed an amendment that the patient should have the right to contract out of any scheme and the doctor the right to charge fees to patients not on his list Dr Craig pointed out the analogy with education, in which people contracted out and sent their boys to Rugby, Harrow or Borstal If anyone preferred to be exploited by a private doctor he added in a pardonable confusion of nursery rhyme, then "goosey, goosey gander, come and be killed" Reproached by the chair at this point he admitted he found himself expanding instead of contracting, but finished pertinently with the remark that the doctor did better work when he need not consider the patient's pocket The amendment was carried The meeting supported a proposal that, whatever provision was made, the principle of payment for medical services (other than those provided by public assistance) should be maintained either through contributory or insurance schemes

STATE SERVICE

A motion by Bromley, Chesterfield, Leigh and Swansea, that the basis for the coordination and integration of health services should be the establishment of a whole-time salaried Government medical service, was hotly debated and then lost by 177 to 20 This was noteworthy because many of the speeches favoured the motion Thus Dr H W Pooler regarded the health centre provided by a statutory authority, discussed in the interim report, as a step towards a complete service Dr J A L Vaughan Jones felt we must plan for both the community and the profession, with the community in the foreground, and that we were moving towards socialisation of services Dr C I Schiff pointed out that any discussion of this topic would have been impossible fifty years ago and barely possible thirty years ago—an indication of changing thought Dr J M Hunter however reminded the meeting that they had already passed resolutions providing that the patient should have free choice of doctor, and that group practice should be arranged by the doctors themselves Neither would be possible, he said, under a state service Dr F M Rose believed a state service to be inevitable in the long run, but Dr D A Ireland said Shropshire was against it Dr Frank Gray shook his head over the doings of Whitehall and asked whether judging by its acts the Ministry of Health was the best body to provide a medical service? He would not vouch for its honesty Sir Kaye Le Fleming reminded the meeting that the salaries in a state medical service would no doubt resemble those in the defence services Doctors would lose their freedom, he said, to be at the mercy of a Government that had never shown any great interest in the welfare of the medical profession Other speakers agreed with him and the final vote was a landslide

THE BROAD PLAN

A motion that the plan in broad outline in the draft report should be adopted was subjected to some manipulative surgery before it was put to the meeting Thus Dr J A Ireland (Shropshire) proposed that it should be adopted only in so far as it related to changes in central and local administrative and advisory machinery His division, he said, wished to see the hospital system pooled and brought together under a regional body The chairman remarked that if the amendment was passed it would rule out health centres Dr Pasmore

MEDICAL PLANNING

CONFERENCE OF BMA REPRESENTATIVES

SEPT 8–10, 1942

Faced with 218 items on the main agenda and a further 36 on the supplementary agenda, the representatives of divisions of the British Medical Association settled earnestly down to work at BMA House on a Tuesday morning If the gathering lacked some of the ginger of the old days, it managed, under the chairmanship of Dr H Guy Dain, to get through this mass of business by the afternoon of Thursday The main debate was, of course, on the draft interim report of the Medical Planning Commission, but it was preceded by one or two topics of interest to the profession at large, as well as domestic items affecting the association

WHO SHOULD PAY FOR THE CMWC ?

Dr Arthur Beauchamp (Birmingham Central) moved that the payment of the Government towards the expenses of the Central Medical War Committee was inadequate The expenses of running the committee had been estimated at £17 000 and the Government contribution only amounted to £7000 The Government, he felt, should give more help At least half the work of the committee was voluntary, and no Government department could do it as cheaply Of course, he added in a burst of frankness, the association would not like the work to pass out of its hands He was supported by Dr W D Anderson who thought the Government grant should be increased and Dr C I Schiff who did not see why the association should bear any of the cost Dr J W Bone, as treasurer of the association, admitted that the grant was not a large one, but said the figure of £17,000 estimated as the cost of running the committee was a generous estimate If the association started bargaining the Treasury might set up its own machinery, and it was to the advantage of the association to continue to make this contribution to war work and to the profession as a whole The Chairman remarked that the treasurer was out in supposing £17,000 to be a generous estimate , the cost of the committee was £21,000 The meeting supported Birmingham's view that the Government should make a larger contribution

DEPENDANTS OF SERVICE MEN

Bristol had sent in a motion expressing dissatisfaction with the reply of the Government about provision of adequate medical attention for the dependants of those serving in the Forces Dr G C Anderson, secretary to the association, said in preface that this need had been repeatedly put to the departments concerned, but the Government was not prepared to make any provision, and had stated two months ago that the subject would not be reopened Dr F H Bodman (Bristol) then introduced the motion , Bristol, he said, was dissatisfied with the Government reply, and was unwilling to let this scotoma at Whitehall go untreated The dependants of civilians had never been so well off in their lives, but the dependants of serving men were forming a new depressed class They were living in furnished rooms instead of homes of their own , the mother had to go out to work, and could not afford either the money to take a child to the doctor or the time to take him to an outpatient department Thus the child's health deteriorated because treatment was delayed and he had seen cases of tuberculosis and heart disease in children which had been neglected for these reasons Service men were indignant about the lack of care of their children , the association should press the Government again The meeting agreed with him

THE SERVANT PROBLEM

No tea-party of suburban ladies ever discussed maids with more feeling than the representative body After some absorbing gossip on "wait-till-you-hear-what-happened-to-me" lines, the chairman invited the meeting to be less domestic Dr F E Gould (Birmingham), who moved that the council should try to secure reservation of at least one maid in each doctor's house and of the doctor's dispenser, pointed out that more women doctors would be able to get on with their profession if there were maids to relieve them at home Dr Anderson's statement that the Ministry of Labour had consented to give special consideration to cases where doctors were experiencing difficulty through calling-up of maids was sniffed at The meeting wanted its maids and dispensers reserved, not returned after an interval of chaos , and it carried the motion Dr Mona Macnaughton (Newcastle-on-Tyne) proposed that doctors' maids should have the same exemption from military and other service as similar staff in hospitals This, she said, would enable authorities to direct maids into doctors' households which they were at present not at liberty to do , the meeting supported her

THE WEALTHY PANEL PATIENT

Dr H E Offord (Reigate) asked the meeting to disagree with the present system whereby high incomed people became eligible for National Health Insurance by virtue of some low-paid employment Total income, he said, should be the deciding factor People with considerable private means are getting NHI benefit through taking some low-paid civil defence or other employment The income of one of his panel patients was £2000 a year He was supported by Dr A Stavely Gough who suggested that a decision should be based on the gross income available for taxation after deduction of family allowances He had on his panel the five grown-up children of a man with a private income of £5000 Dr E A Gregg said that the Insurance Act Committee had already considered this point, which bristled with difficulties , but they were willing to try again and on his suggestion the motion was referred back to the council

Medical Planning Commission

Mr H S Souttar, in presenting the draft interim report of the commission reminded the meeting that it was no more than a draft , and that it was important for the council to know what the association thought about it The Chairman then moved that the meeting should consider the report under several broad heads Two amendments, from Wandsworth and Halifax, that no changes should be decided on until victory was achieved and absentee doctors had come back to speak their minds, were lost The meeting was perhaps influenced by Major R Scott Stevenson, who took the view that those in the Services would resent it if, in their absence *practitioners at home settled the status of the* profession for a generation to come , but they would resent it still more, he said, if the home team allowed some outside body to settle things for the profession Recognising that they would thus be in the doghouse anyway the representatives might well have felt daunted Dr Anderson, however, said that the authorities had agreed to allow any decisions reached by groups of doctors in the Forces to be passed on to the association, and though Major Scott Stevenson remarked gloomily that news of this concession had not so far percolated to *him* the meeting felt encouraged to vote against committing themselves to a policy of unmasterly inactivity

They agreed that, broadly, the objects of our future medical service should be to provide a system directed to the achievement of positive health, prevention of disease and relief of sickness, and to render to every individual all necessary medical services—general, specialist, domiciliary and institutional Motions to remove the word "positive," as having no meaning in the context, were defeated , it was said to have a propaganda value

FREE CHOICE

Many divisions had sent in a motion that free choice of doctor and patient should be an essential feature of any future service An amendment by Bolton that the word "important" should be substituted for essential was moved by Dr H W Bowyer Free choice, he said, was essential as far as administratively possible, but if health centres were set up there must necessarily be some limitation of choice Dr Thomas Craig pointed out that distance was also a limiting factor in choice but Dr J C Arthur was for the word essential, holding freedom in choice of doctor to be parallel to freedom in choice of priest, and one of the liberties of democracy We have even been trying to get some opportunity for choice, he reminded the meeting, for the Poor Law patient Dr A T Rogers thought the word restricting, since rota systems hindered free choice, and yet it might be that the profession would wish to make use of

Industrial Difficulties

Dr MACNAUGHTON said that in her area (Newcastle) the relationship between the general practitioner and the industrial medical officer was not a happy one A subcommittee had been formed to discuss it but without good results since the industrial officers said that the ethical subcommittee of the association had not met since before the war, and that they could not be expected to keep prewar rules She asked that this matter should be referred to council for investigation She was supported by Dr CRAIG Dr BONE said that the rules were certainly being flouted but they had been drawn up with foresight and only small alterations had been necessary These were constantly in the mind of the subcommittee Dr INWALD proposed that general practitioners should be appointed as part-time officers to all factories not employing whole-time officers and that cooperation between the general practitioner and the factory officer should be facilitated At present general practitioners are ignorant of the conditions of work in factories, but much of the population is employed in small factories and general practitioners who had had training in industrial health might give help there Dr WAND said that the committee on industrial health supported this, and the motion was carried

Tuberculosis—Some Other Topics

A long motion put by Dr A PHILLIPS (City) noted with concern the increased incidence and death-rate from tuberculosis and urged the need for wider powers for the provision of financial assistance to patients, so that they should not be deterred from accepting a full course of treatment, and also asked for adequate institutional care The motion attributed the increase to the effect of long hours of work especially on young and immature people Dr Phillips spoke of the difficulty of persuading a father of a family to accept treatment and Dr J A BROWN also emphasised the ill effects of overlong hours The meeting agreed heartily

Dr W B HEYWOOD WADDINGTON (West Sussex) proposed that for negotiation with the Ministry of Health there should be a drawing together of bodies representing existing medical opinion He had in mind the Medical Practitioners Union and the Socialist Medical Association The motion was lost

Dr BARBARA ABERCROMBIE (Liverpool) drew attention to the discrepancy between the cost of oxygen cylinders supplied to garages and those supplied to the medical profession—2*s* 9*d* as against 9*s* 6*d* The matter was referred to council

Dr WHITAKER (Guildford) wanted Whitehall to send on automatically to civilian practitioners the medical history and results of special investigations on men and women discharged from the Forces on medical grounds The meeting shared his wish

Dr H D McILROY (Greenwich) moved that the law should be amended to allow medical practitioners to act as members of local authorities while participating in their medical services The CHAIRMAN pointed out that the medical profession could hardly expect to get a privilege not granted to any other servant of a local authority and the meeting passed to the next business

Sir KAYE LE FLEMING moved that further consideration should be given to the machinery for introducing health legislation The Minister of Health, he said, came into office knowing little about health administration and his chief advisers were out of touch with medical practice The medical members of Parliament, much as he liked them, would never have got there on the suffrages of their colleagues Everyone agreed with him and supported the motion

A motion introduced by the City by Dr SCHIFF was also accepted, it provided that the local medical war committee should take what steps were necessary to secure mutual help among local practitioners—by rotas for night and emergency work, and the like—to meet the increasing strain as doctors are drafted into the Services

The New President

Sir BECKWITH WHITEHOUSE, introduced by the retiring president, Dr T FRASER, opposed a state medical service and discussed the education of students who, he feared, were too materialistic in their standpoint these days He regretted political student societies, and welcomed the inquiry now being conducted by an interdepartmental committee into medical education

In England Now

A Running Commentary by Peripatetic Correspondents

READING your correspondents on the subject of childbirth, I am sure someone should write a popular treatise, or even a novel, describing just *how* unpleasant or painful normal childbirth is Almost everyone seems to have read "Farewell to Arms," in which it emerges as an awful affair and the gas doesn't work Apart from that, male practitioners are always being told that they just can't imagine, and that if men had to have the babies there wouldn't be any But there are other pains which are common to male and female, cannot we be told how labour pains compare with intestinal colic, renal colic or cramp ? If only one could point firmly to a book, or even a paragraph from one of your peripatetic multiparæ, it would be easier to deal with such purely monosexual arguments As it is, the ordinary male doctor has to shy away from the question of labour pains, though for the patient pain is probably the most important point of all It is all very well saying that it is a natural and supremely satisfying experience when it's over, I know I shall feel fine when I leave the dentist's chair, but that's no comfort three quarters of an hour earlier

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The Students' Number started a conversation on the humour of examinations This may not be obvious to examinees, but time's benign therapy lets us see the funny side *Dulce est desipere in loco* "I remember," said the obstetrician, "a man in my class coming lugubriously into the Union, quite sure that he was down in midder since he had completed a question on the management of breech presentations with a detailed account of decapitation of the after-coming head However, he was granted an oral (*Anglice*, vyver, or so it sounds to the Scot) at which the examiner asked him to enumerate the contents of his bag if he were going to a breech case He produced a formidable list, finishing off with a decapitation hook 'And what is that for ?' asked the examiner 'To decapitate the after-coming head,' was the answer—as he afterwards said, forced from his unwilling lips" This recalled to the physician another story about a bag, this time the student being asked to prepare to do a lumbar puncture at a patient's house He also produced a detailed list, and when he was finished the examiner said gently, "Would you not include a syringe ?" "Oh yes, sir, certainly, a syringe, sir" "What sort of syringe ?" "A Higginson sir" When the laughter subsided the surgeon remembered how he had been making very heavy weather of materia medica and had explained that the action of ammonium chloride was to dissociate in the lungs into free ammonia which was a respiratory stimulant, and free HCl which acted as a disinfectant The shuddering examiner had hastily changed the subject to the treatment for an overdose of opium, for which the embryo surgeon had recommended strong tea The examiner agreed, but pointed out that strong coffee was more frequently advised "Yes sir, I know, but the tannin in tea is a precipitant for alkaloids, so I would prefer it" "Good God!" exclaimed the distinguished pharmacologist, "I never thought of that before Did you think of that yourself, my lad ? Excellent!" He got through Then the obstetrician returned with another of a girl who had been up for clinical midder with him, and after she had done fairly well with the examination of the case, the examiner said, "Suppose this were a case of Bandl's ring, what would you do ?" This brought her up short She hummed, hawed and stammered, but produced nothing coherent "Come now, miss, you must make up your mind quickly, if you don't do something immediately the outcome might be fatal" "Please sir," burst out the embarrassed candidate, "I'd send for a doctor"

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The fair, organised by the children for a charitable object and held in the garden, realised £4 3*s* 11*d*, it was a qualified success A tentative suggestion of mine that the proceeds might go to a starving fathers' fund (to which I was willing to act as treasurer) was sternly negatived Instead, I was issued with a seedy topper, a still seedier tail-coat and a badly holed umbrella from the charades trunk and told to guess—and guess accurately—the body-weights of all comers for the absurd suggested that the meeting would like health centres set up but not of the type outlined in the report, which he described as glorified outpatient departments Dr Beauchamp disagreed with this view of health centres, he saw in them a chance for a man to profit by consultation with his colleagues They were hoping in Birmingham, he said, to set up a health centre, this amendment would make that impossible Dr Ireland rescued the meeting from its dilemma by removing the word "only" from the amendment after which amputation it was carried

Dr J C Arthur (Gateshead) asked that the proposals relating to the establishment of health centres should not be approved This led to a useful discussion of health centres, which seem to promise more benefit in towns than in country districts Dr Somerville, speaking from the heart of Midlothian held that while doctors in a country district would not get full advantage from a health centre they would at all events get the chance of consultation with colleagues and the use of laboratory and X-ray services Consultations with specialists could also be arranged at the centre Dr J G Thwaites hoped that the centres would be provided with auxiliary services, including nurses, health visitors, electrotherapeutic equipment, facilities for performing minor operations and a combined dental centre Dr Craig was morbidly convinced that the consultant would be kicking his heels in a health centre when he ought to be working in hospital He thought the whole idea of health centres required years of consideration Dr Wand pointed out that having agreed to group practice the meeting must have ideas about where the groups were to work They would have to have premises and they might as well have the best that could be devised Dr R W Rae said that in Staffordshire they felt that health centres would only be possible as part of a full health service Doctors already had enough equipment for treating patients in their surgeries, radiology should be at hospitals in the hands of experts All the doctors needed was better laboratory help Dr A J McCutcheon (Glasgow) pointed out the advantages of a health centre to the doctor he could live in a smaller house and save on petrol, and he would always have a locum available if he was ill

Dr T W Turner (Guildford) had no sympathy with the lone wolf who felt he could get help only from the pundit He was in favour of group practice in the health centre, and so was Dr H S Howie Wood (Isle of Wight) who remarked that 100% of doctors' wives would be in favour of practice away from the house Dr S W Swindells (Grimsby) thought nothing but health centres would make it possible to take back the care of the children which had been lost to local government services Dr Gough (West Herts) thought the needs of different districts were bound to vary and was anxious that health centres should at first be experimental Dr W N Leak, though attracted by health centres, resisted their glamour because he thought they would lead to too much regimentation Dr Gray brought the meeting back to the broad issue, did they approve of the principle of health centres or not? He had grave doubts himself and thought the scheme set out in the report would be unworkable, but if the meeting approved the principle the commission could get to work and devise a scheme in much greater detail for consideration next year The Chairman believed many would be in favour if they were assured that experimental, not statutory health centres were to be set up No proposals to set up statutory health centres at this stage had been made by any public body Dr Wand suggested the substituted amendment that the principle of health centres be approved which was carried in place of the original amendment A further amendment excluding health centres on a statutory basis from this approval was defeated, as Prof R M F Picken pointed out, if carried it would have eliminated any state provision, yet it was inconceivable that ultimately health centres could do the work now done by local authorities on any other than a statutory basis The plan in broad outline as far as it affected health centres set out in the draft report of the medical planning commission was then approved

A motion by Fife that unification of hospitals under a regional body should be approved, provided unification was confined to general hospitals and that special hospitals were excluded, was lost, the meeting felt that special hospitals and even mental hospitals should rather become part of the general hospitals Dr W Yeoman (Harrogate) moved that all regular medical practitioners should have the right to take part in the national service and should as far as possible have choice as to the area in which they were to serve, not unnaturally he carried the meeting with him So did Dr J A Pridham (Dorset) who moved that agreement to any new scheme for the regulation of medical practice should be subject to equitable remuneration being obtained, and also to adequate and agreed compensation being given for the capital value of practices A proposal from Aberdeen that there should be adequate financial provision for research was accepted without a vote

GOVERNMENT OR CORPORATE BODY?

Two motions were considered together, being mutually exclusive that the central machinery of the medical service should be a Government department, and that it should take the form of a corporate body Dr J H Stephen (Aberdeen) introducing the former motion had a good word for the devil we know Dr Schiff feared that corporate bodies might spring up and interlink, and the power of Parliament would be superseded Guildford, speaking through Dr D F Whitaker, favoured a corporate body, glancing with admiration at the London Passenger Transport Board Dr Pasmore complimented the BBC too, but pointed out that the powers of such corporate bodies were limited by charter and a new charter was needed before any advance could be made This handicapped day-to-day action Moreover, the public could exercise little influence on the deliberations of such a body Dr Gould expressed the distaste of Birmingham for control of the service by the Ministry of Health as at present constituted The ministry had been described as the legitimate child of the BMA, but the child had turned round and taken the bread out of its mother's mouth The local authorities, he added with a brisk change of metaphor, were tarred with the same brush Dr Rae thought the form of committee didn't matter as long as half of it was composed of medical men and Dr R W McConnel brought detailed views from the Bucks division, which was not in favour *of either the ministry or the approved societies as organising bodies* Dr A S Wigfield pointed out that the Minister of Health, owing to his usually short term of office, was handicapped by lack of time, and the civil service by lack of power of independent action, while F W Grant having noted that the ministry had administered National Health Insurance for thirty two years, asked if anyone thought they had made a really good job of it? The meeting rejected the ministry in favour of a corporate body by a large majority Prof Picken remarked that this put the association in an awkward position with Government departments and bound their hands unduly, and after a little shuffling an amendment was carried that the meeting, having expressed a strong preference for administration by a corporate body, referred the matter to council for further consideration

A motion was carried that whatever body is set up to deal with decentralised health, administration should be required by statute to delegate the administration of hospitals and other medical health and ancillary services to a committee or committees composed of (1) non medical members of knowledge and experience in health matters, and (2) medical men in adequate numbers elected from among the medical men in the area

A motion that any medical scheme should be divorced from the control of the approved societies was accepted unanimously A proposal that any interim changes necessary before a complete plan could be brought into action should be so designed as to fit in the plan as now evolving was also passed with little deliberation, as was a proposal that plans for immediate postwar application should include the creation of regional hospital councils with executive or advisory functions Cardiff moved that the conditions of service in any new scheme be the same for men and women and that they should both have equal opportunities of promotion and experience, this was carried unanimously A motion from Oxford providing for hospital beds for the patients of general practitioners, under the new scheme, was accepted

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M P

THE House reassembled last week to hear the Prime Minister s report on the war and to transact some urgent business including the voting of another £1000 million for the war and then adjourned again The war debate was a fiasco Mr Churchill's speech did not manage to prevent a number of members leaving before it was finished and during Mr Greenwood's speech for the Labour Party nearly all the rest left to get lunch While Mr R A Cary (Conservative) and Dr Haden Guest (Labour) were speaking there were very few present and when Dr Guest sat down the Conservative Whip moved " to report progress " and the debate ended for the day The House is tired and perhaps it has been sitting too long long over the normal life of any Parliament

But if the House is tired the departments are very busy and the Ministry of Health has been helping the new Ministry of Fuel and Power in the organisation of its projected medical service The orthopædic and fracture service of the EMS hospitals is to be available to all war industries including mining There are 21 orthopædic centres in England and Wales covering all aspects of treatment and rehabilitation from initial resetting to the stages of physiotherapy remedial exercises and occupational therapy About 60 fracture departments in England and Wales are used for cases needing a long stay and others are adapted for cases which only need a shorter stay There are 7 orthopædic centres in Scotland and a number of hospitals with fracture departments The integration of these services in the EMS is to be of great value in the war effort and of permanent value in industry and it is hoped that a full statement will be able to be made when the House meets again after the recess

Another matter which will also claim attention is the treatment of VD cases The percentage incidence of syphilis has increased sharply, over the whole population, since 1939 and is likely to rise further Will it be possible to divorce this subject from any but health considerations and deal with it on its merits as a problem of hygiene If this is to be done there must be more propaganda as open as that for protection against, say, diphtheria which will aim at creating a hygienic conscience in the nation on this matter

The facilities for treatment in every locality must be given more publicity and each local authority should make sure that their area is adequately provided The crucial problem remains of people known to be sources of infection who either refuse or neglect treatment This is a thorny question for Parliament and for the local government authorities but it demands attention in view of the rising incidence of syphilitic infection

QUESTION TIME

Fertility Data

Fertility statistics for 1939 based on material obtained under the Population (Statistics) Act, 1938, have been prepared and will be published in due course under the limited edition arrangements applied to the Registrar General's annual publications Fertility statistics based on the 1931 census returns would normally have been published in a Decennial Supplement volume which was in course of preparation on the outbreak of war The latter statistics are, however, indirect and far inferior to those now obtained under the 1938 Act , and it has not been thought necessary to proceed with the completion of this volume during the war The principal indications afforded by the census material were published in the Registrar General s Annual Review for 1937 (Mr E BROWN replying to Mr IVOR THOMAS)

Diphtheria Immunisation

In reply to a question Mr BROWN stated Information from about 90% of the local authorities whom I have asked for returns shows that in the six months ended June 30 last, out of some 13,400 children notified as suffering from diphtheria about nine tenths were children who had *not* been inoculated, and that in 797 fatal cases there were 780 non immunised children, as against 17 who had been inoculated.

Mines Medical Service

Mr JAMES GRIFFITHS asked the Minister of Fuel and Power what steps had been taken to establish a medical service in the several regions under the reorganisation scheme , and if he would cause an investigation into the effect of diet deficiencies particularly deficiency of fats, upon the health of coalminers —Major LLOYD GEORGE replied Officers of my department with other departments are working out a scheme for a mines medical service, and I hope to be able to announce my proposals shortly The general question of diet is a matter for the Minister of Health, but food in relation to the colliery canteens has been considered by the Miners' Welfare Commission in association with the Ministry of Food and in consultation with high medical authorities

Mr GRIFFITHS Is the Minister aware that in some areas the doctors are concerned about dermatitis which they think is due to deficiency of fat in the diet, and will he bear in mind that unless miners are given adequate food the output is bound to go down ? No further reply was given

Silicosis Report

Mr GRIFFITHS asked the Minister what progress had been made in the consideration of the report of the Medical Research Council on the problem of silicosis , and when it was proposed to give legislative effect to the committee s recommendations —Mr O PEAKE, replied Proposals for action in the direction recommended by the committee have been communicated to the two sides of the industry and discussions are in progress I hope that it may be possible to reach agreement on these proposals at an early date as a basis of legislation

Eyestrain among Industrial Workers

Mr D ADAMS asked the Minister of Labour whether, as visual strain was an important factor in industrial capacity and accidents, provision was made to meet eyestrain and similar ailments in industrial concerns , and whether the services of surgeons and opticians were where required, available —Mr G TOMLINSON replied The main provision made against eyestrain in factories is the requirement of lighting which is both sufficient and suitable For some fine work special lenses or other aids to vision are provided There are no special arrangements for factory workers as such to obtain the advice of ophthalmic surgeons or opticians, but a few factory managements have made special arrangements to assist their workers in obtaining such advice

Mobile Dental Units for Workers

Mr ADAMS further asked the Minister whether he had considered the provision of mobile dental units for industrial concerns —Mr TOMLINSON replied The Minister is aware of the importance of the care of teeth, and the question of arranging for mobile dental units without prejudice to other facilities has been repeatedly considered, but the shortage of dentists has been an obstacle, particularly as it has been felt that existing facilities would tend to be impaired if dentists were called upon to spend more of their time in visiting factories

Addition of Calcium to National Flour

Sir ERNEST GRAHAM-LITTLE asked the Parliamentary Secretary to the Ministry of Food whether, inasmuch as milk is universally recognised as the best source of calcium in the diet and the supply of milk had progressively increased since the outbreak of war, he would reconsider the decision to add chalk to the national bread.—Mr W MABANE replied The Minister is not prepared to reconsider his decision to make some addition of calcium to the National Four While the overall consumption of milk, which is the most desirable source of calcium, has increased since the outbreak of war the intake of calcium per head of the population prior to the war was abnormally low I would refer to the report by the Medical Research Council, published in the medical press in May, 1941

Wheat Germ in Proprietary Medical Products

Sir E. GRAHAM-LITTLE asked what proportion of the wheat germ separated from the grain in milling had been allocated, in accordance with the confidential instruction CMC 191, (30/4/42), during the past three months to proprietary products, whether foods or medicines, and to be at the disposal of the millers in the ordinary way of trade, respectively —Mr MABANE replied During the last three months more than 99% of the output of germ not retained in fee of threepence a time Unless my guess was correct to within 3 lb I received no fee at all Despite many gross and humiliating blunders I contrived to clear up about five bob, but had I been called upon to disburse threepence every time I made a mistake I might now be in the hands of the Official Receiver The skittle-alley (roll, bowl or pitch) and the cockshy both made good money and so did the bagatelle board, though we dropped a packet—half a crown, in fact—on a game which consisted in throwing pennies on to the black squares of a chess board, too late we realised that we hadn't made it difficult enough and that the money prizes were too high But the air-gun shooting at very small targets and pendent apples was almost impossibly difficult and here we took eight and fivepence The numerous and costly but almost unringable gifts at the hoop-la table attracted plenty of custom, and fortune-telling, at fourpence a time, was a bargain not to be missed Here it was interesting to observe how cheerfully many a mature and happily married matron reacted to the news that she was to be married again, perhaps three or four times Hope springing eternal, I suppose The largest single source of revenue, excluding perhaps the sale of synthetic lemonade and a terrible pink drink that looked like Red Biddy at 2½d the glass, was unquestionably pony-riding For twopence you could have a hundred yard hack on the large bay, and, for a penny, a shorter but perhaps more exciting ride on the small black who was a bit on the fresh side The children fairly queued up for these Each had to be lifted on and held firmly in the saddle, and when lifted off at the end of a ride merely rejoined the queue It began to look as though it would never end, but providentially the rain came, during which I was able to escape and recruit my exhausted energies in the comparative peace of evening surgery

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We have lived through a ten days' terror, for it is just that time since a misguided colleague suggested that our medical staff could produce something better in the way of concerts than many we had experienced The spirit of emulation everywhere leads to trouble and our concert threatened to bring full measure of that There must have been something in the air on that night of ill-fated decision, for though some of us, the more balanced majority, knew well the dire peril towards which we were heading no determined voice of protest was raised Only one of our colleagues expressed serious doubts, and these arose not so much from principle as from consideration of the part in which he seemed likely to become involved, a part so light and elfish that he thought it in ill-accord with his sedate respectability, for would his wife approve of a project that featured him as the father of a ventriloquist's doll, none other than one of our petite lady house-surgeons? But his fears were groundless, for providentially the lady decided to marry on a date which rendered her return in time for the concert scarcely decent, though she did offer to interrupt her honeymoon, so the ventriloquistic act had to be deleted, possibly to the edification of the body politic

It was decided that every member of the staff must contribute to the programme, that there should be an opening chorus and a finale with all on the stage, and that each of the items constituting the body of the programme should be the individual concern of one member of the staff, who would be responsible for rehearsing his own little piece and bringing it to final rehearsal ready for presentation That was the theory Suggestions for the several turns were considered in the broadest of broad outline and the conspirators retired to their several dens to write the chapters of the book The days passed and weird knots of medical people were to be heard making ill-assorted noises, with all sorts of weapons in all sorts of corners Two days before the concert was due we gathered for a rehearsal It was awful! The individual items were diamonds in the rough and the whole as a composite effort beggared description Then there emerged, as usually happens, one who was chief among us He marched us up and marched us down until many felt that life would never be the same again, that concerts were an invention of the devil and that this particular son of the devil who had the mania for rehearsing should be suppressed For 3½ hours we rehearsed a 90-minute show on that wretched evening, and on the day before the concert we returned to the charge This time things were better It began to look as if after all some order might be evolved from the chaos, though the rehearsing demon was still far from satisfied

On the actual night of the concert we fortified ourselves, each in his own way, and half an hour before the curtain we went apprehensively to our dressing-rooms to acquire our fine raiment and to have applied those deft touches that are supposed to make the finished artiste We started right on time after a last minute argument with an obstinate curtain which seemed determined to make a dying effort to save us from our folly There was a burlesque medical board, showing from the inside how these things really happen and how glamour can oft deflect the course of justice, and an enterprising effort by an accomplished salesman anxious to interest a passer by in the merits of a patent mousetrap There were songs grave and gay, some topical, with all the makings of trouble There was the mixed tale of a radio whose knobs went wrong, and there was a Brains Trust with a quota of eminent physicians far outshining any of their less illustrious contemporaries in dealing with a wide variety of questions that gave free rein to many shrewd barbs Questions were invited from the audience, but it was found expedient to ignore these, it is understood that that sometimes happens even in the best Brains Trusts Then there was a lecture on his travels by one of our travel-stained veterans, who outlined his crazy path through darkest Africa, having invoked the assistance of a colleague of artistic soul to draw for him illustrative lantern slides that had to be seen to be believed—slides with the most gorgeous, decrepit camel duly vaccinated, the most prehistoric bicycle in all dark Africa, and a hitch-hiking monkey that was the lecturer's constant and devoted friend There were lightning sketches by the artist in person and there was a wonderful closing chorus featuring some of those songs of the west that seem to be everywhere these days, with a shooting up of the villain and the emergence of a triumphant if breathless and horseless sheriff, the costumes for this final blaze of glory were procured with some difficulty and the connivance of the local boy scouts What appeared to afford the audience most merriment was the opening chorus, with its dresses made on the premises, featuring the entire medical staff attired as VADs might appear in their raiment of office The first appearance on the stage of this pseudonursing serpent sent the audience into a convulsion from which it never really recovered, and it was only afterwards that we learned that the prime causes of their laughter were effects altogether unrehearsed—the most friar-like of the brethren had come apart at the back and looked rather more like a prosperous butcher than a down-trodden nurse, while the physician, who later in the evening sang a sad tale of one Donald who took to golf, appeared in this opening chorus in concertina stockings, which earned him lasting disgrace Self-conscious nurses came unstuck in all sorts of impossible places The carefully rehearsed words of the chorus never reached the pianist, much less the audience, and the whole thing was a glorious fiasco which somehow set the seal of success on everything that was to follow But there will never be another doctors' concert if we can help it

* * *

At the end of an outpatient sitting I often wonder what it is that the doctor really does say to his patient First came Mrs Jones, sent up by Dr A, whom I know well as a man who loves the English tongue and chooses his words with care She described to me how she felt icy cold in spite of the fact that she was hemmed in by a little wall of fire no more than a foot high, and how her two kidneys, as she lay on them, felt like two great white slugs under her ribs Then she went on, " And I sez to Dr A, I sez, ' Doctor, what shall I eat? ' and 'e sez to me, ' Mrs Jones, you make a sack of your stomach and pop into it just what yer fancies! ' " Next came Mrs Peabody whose doctor had " told her straight " that it was the shock of her poor husband leaving her that had opened one of the valves of her heart and that nothing but the grave would close it Finally Mrs Beadle gave me this graphic but apparently second-hand account of her cystitis " Me doctor 'e sez to me ' Mrs Beadle, yer bladder's gorn and there's nothing but the strings of it left ' " I wish the doctors would put their picturesque phrases straight into the letters they send up

Letters to the Editor

POST-ARSPHENAMINE JAUNDICE

SIR,—In your annotation of Sept 5 (p 287) you say "It is reasonable to suppose that many cases of post-arsphenamine jaundice are due to virus infection, the resistance of the liver having been impaired by the toxic action of the arsphenamines "

Early in 1940, when I was assistant pathologist to the LCC Whitechapel Clinic for the Treatment of Venereal Disease, I began an investigation of jaundice occurring in patients undergoing treatment for syphilis The period under review was from June, 1930, to Dec 31, 1939, which was later extended to include 1940 In this period there attended the clinic over 3400 cases of syphilis, of which over 2200 received arsphenamine Among these latter between 260 and 270 patients developed jaundice For the purposes of this investigation post-arsphenamine jaundice was defined as that occurring within not more than three months after the last dose of arsphenamine It was found that 90% of cases of post-arsphenamine jaundice occurred within 4–6 weeks after the last dose of arsphenamine An analysis of the results in terms of (*a*) number of grammes of arsphenamine actually administered before jaundice appeared, and (*b*) the length of time during which arsphenamine had been administered, showed that 6–8 g of arsphenamine given over a period of 10–13 weeks produced the highest percentage of jaundice It should be pointed out that of any given number of patients starting treatment for syphilis only a fraction actually continue steadily receiving arsphenamine, which means that the number of patients receiving 6–8 g of arsphenamine is very much less than those receiving 1–2 g , yet the absolute and percentage incidence of jaundice in the higher dosage levels is greater than in the lower

It is well known that there is a lag in the excretion of arsphenamine, so that if the drug is given continuously every week there must occur a gradual increase of arsphenamine in the liver Post-arsphenamine jaundice is a function of two variables—the virulence of the virus of infectious jaundice and the extent to which the accumulation of arsphenamine has rendered the liver susceptible to the virus That the part played by arsphenamine is important is shown, I think, by the existence of what may be called an optimum dosage and duration of arsphenamine and by the fact that the incidence of jaundice was evenly spread over each month of the period under review, whereas pure infectious jaundice has a seasonal incidence It happened at the Whitechapel Clinic that in January, 1937, there was a change in the methods of treatment Whereas previously 7 5 g of arsphenamine had been given in a period of 13 weeks, after January, 1937, each patient attending with syphilis received (or was intended to receive) 13 g of arsphenamine in 13 weeks If jaundice is partly due to the accumulation in the liver of injected arsphenamine then patients receiving the latter amounts of arsphenamine should show a greater incidence of jaundice In fact while until the end of 1936 the average incidence of jaundice had been 7–8%, in the years 1937, 1938, 1939 and 1940 the incidence was between 25% and 30%

All the figures I have quoted are from memory, as the records and a thesis based on the records were destroyed by fire due to enemy action in May, 1941, and my duties since that time have prevented my repeating the investigation

London, E C 2 F R CURTIS

LIFE CYCLE OF THE THREADWORM

SIR,—In your issue of Sept 12 Dr Orme cites an instance in which, on the third day of a visit to relatives, one of two Eurasian children in the Malay States experienced for the first time intense anal irritation, while next day both showed numerous threadworms in their fæces He suggests that the visitors became infected from the children of the house (who *had heavy* infections and were inveterate nailbiters), he cites the textbook statements that these worms reach maturity in a fortnight, and he believes that this statement needs reconsideration

Of this parasite T Spencer Cobbold (Parasites, London, 1879) wrote thus "Prof Leuckhart and three of his pupils courageously infected themselves by swallowing eggs and had the satisfaction of observing young oxyurids in the stools fifteen days later " Cobbold then pointed out that these eggs may be found in the margins of fingernails and added, "One aristocratic person, who was infested with myriads of these entozoa, confessed to me that in his extreme distress and consequent rage he had freely bitten the live worms in halves between his teeth " But, as was the case with one of the children cited by Orme, there need be no such extreme reaction from an infection which is common, as the following two instances show Using the NIH swab these eggs were found in 41% of 2097 white children in Washington (*Lancet*, 1939, i, 1167) My own experience of prisoners admitted to a district jail in Bengal is that in every instance in which thymol was given for any reason, threadworms were later found when fæces were adequately examined, and that their hosts accepted in ignorance and with equanimity the presence of what were in practice symbiots Evidently the degree of irritation experienced by the host depends in part *at least* on his own temperament , absence of infection may not be accepted on the ground of absence of local irritation but only on absence of disclosure of infection in adequate fæcal examinations, for instance by the NIH swab Failing this control before and after experimental infections, a latent period of less than a fortnight has no firm basis

Ealing CLAYTON LANE

TOTAL MEDICINE IN TOTAL WAR

SIR,—We are much interested in the questions raised by Mr Franklin (in your issue of Aug 29) concerning the better use of medical personnel, and we would like to endorse his views Doctors who like ourselves work in civilian hospitals with EMS beds are until they go into the Army constantly treating Service patients When they are called up the majority cease to do so Instead many of the Service sick are referred back to the very hospitals where the doctors now referring them were once treating them Possibly because the general practitioners are also short of assistance owing to military demands, the civilian work in these hospitals is increasing and with each further depletion of staff the increase is more difficult to meet We understand that in their new sphere the doctors are more profitably employed with prevention, but those who remain in the civilian hospitals spend sufficient time treating cases unsuitable for preventive medicine to cast doubt on whether the distribution of labour is a fair one The doctors are called up but the patients remain

We agree with Mr Franklin that a unified medical service would have avoided a great deal of the duplication that occurs with several separate systems, but even now that these systems are established we believe much could be done to economise in medical staff We wonder whether it would not be possible to arrange for the temporary return to civilian work of members of the RAMC who share with the rest of the Army the periods of military inactivity inevitable in war We wonder whether soldiers with minor ailments could not have provision made for them other than that of blocking beds needed by urgent civilian cases We wonder whether the military and civil interests could not be coordinated to allow of a fuller use being made of the medical personnel of both in districts where a disproportionate amount of work is falling on one

Some of the undersigned will shortly be called up If we regard this with misgiving it is not because we are less anxious than others to pull such weight as we can but because we are not confident that we shall be doing so On the one hand we see our friends now in the Services not fully occupied , on the other we see those left behind are already working 14 hours a day Outpatient clinics are lasting 5 hours at a stretch and are well past the limit of maximum efficiency Further air-raids may find the staff of the civilian hospitals exhausted and yet it is *upon them that the* treatment of all civil and many military casualties will fall

M BIRD M P SHORT
M M C LOUDEN K STAYNES
London M MIDDLETON

flour has been used in proprietary products, either foods or medicines Less than 1% which for reasons of quality was not acceptable for these purposes, has been used in other ways

Pasteurisation of Milk

The responsibility for distribution of milk rests upon the Minster of Food and at present some 70% of the milk supply is pasteurised before distribution to consumers It is anticipated that the rationalisation of wholesale and retail distribution now being undertaken will result in a larger proportion of supply being pasteurised (Mr Mabane replying to Mr David Adams)

War-time Nurseries

Replying to a question Miss F Horsbrugh said The number of war time nurseries operating at Aug 31 is 826, with 34,000 places From the latest return the attendances are approximately 70% of the accommodation provided The staff employed is approximately 7000, including young girls of 16 and older women resident in the districts It is estimated that some 30,000 women could be freed for work of national importance by the nurseries now in operation Complete figures of cost are not available but it has been estimated that the average would be 3*s*–4*s* a day of which mothers pay 1*s*

Notification of Scabies

Mr Evelyn Walkden asked the Minister of Health whether, since the issue of the White Paper, he had given further consideration to the question of making scabies notifiable in view of the opinion of many local authorities that this course would be of material help to them —Mr Brown replied I am advised that it would not be appropriate to make scabies notifiable generally but I am prepared to consider applications from local authorities to have scabies made notifiable in their district, upon being satisfied that the authority have adequate facilities for diagnosis and treatment

Mass Radiography

Sir Francis Fremantle asked the Minister of Labour if he was aware that of 300 consecutive cases of pulmonary tuberculosis admitted to a sanatorium from the Services it was considered that 200 could have been detected at the initial medical examination by the adoption by medical boards of mass miniature radiography as a routine procedure, and if he would now state the position as to the introduction of this method into the practice of medical boards —Mr Ernest Bevin replied I am aware of the analysis I am, however, informed that perhaps half of those 300 cases were examined by civilian medical boards before the adoption in November, 1940, of improved methods of detection of pulmonary tuberculosis It is considered impracticable to establish the method of mass miniature radiographical examination at the medical boards throughout the country —Sir F Fremantle Has the alternative method been pursued of having centre for the examination of these people ?—Mr Bevin I understand that the Secretary of State for War and the other Service Ministers are carrying out the policy announced by me on April 30 —Sir F Fremantle That is to say that the men already in the Services qualify for a great deal of trouble to themselves and the Services afterwards, and cannot we do something to prevent them getting into the Services ?—Mr Bevin I am sorry, but I cannot introduce the system into every medical board in the country that is absolutely impracticable Therefore, the alternative method of detection immediately they have been enlisted has been found to be the most practical way of dealing with the subject

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SIGNS AND SYMPTOMS OF DEFICIENCY DISEASES

The third scientific meeting of the Scottish Group of the Nutrition Society was held at Gleneagles EMS Hospital, Perthshire, on Aug 26 Prof V P Sydenstricker (USA) described the clinical patterns which may be associated with deficiency of the B group of vitamins He pointed out that the requirements for certain of the B group of vitamins are definitely dependent on the composition of the diet and that synergistic reactions probably further condition the requirements Vague malaise, weakness, lassitude, nervous irritability, mild depression, muscle pains, anorexia and consciousness of disturbances of gastro-intestinal motility, are early symptoms common to all group-B deficiencies Later, physical signs develop into fairly definite patterns All symptoms and physical signs resulting from dysfunction or degenerative changes of the peripheral nerves and heart are attributed to thiamin deficiency Certain dermatoses and lesions of the mucous membranes and symptoms referable to the cerebral cortex and mid-brain are thought to depend on depletion of nicotinic acid Other changes in the skin and mucosæ and a variety of disorders of the visual apparatus respond to treatment with riboflavin In addition to these there are certain dermatoses and ocular disturbances which respond only to treatment with the entire B group

Dr John Yudkin (Cambridge) reviewed the diagnostic criteria of vitamin deficiency in relation to recognised diseases of unknown ætiology and obscure signs and symptoms He pointed out that the available tests could be divided into those which demonstrate the existence of deficiency and those which show that deficiency is the cause of the condition There are four stages in diagnosis—indirect evidence of deficiency direct evidence of deficiency, the presence of signs to be expected in deficiency, and the cure of the condition by correction of the deficiency

Dr T R Mutch (Aberdeen) gave an account of vitamin-A deficiency in relation to the eyes He pointed out that although vitamin A appears to be related to regeneration of the visual purple, neither the extent nor the rate of dark-adaptation, in his studies, bore any close relationship to the vitamin-A content of the diet Since the introduction of war-time restrictions on diet there has been no increase in the amount of night-blindness, while chronic blepharo-conjunctivitis and corneal ulceration have become less common On the other hand, there has been an increase in the number of infants showing severe photophobia, a condition which readily clears up on improvement of feeding and treatment with cod liver oil and ultraviolet light

Mr John Gerrie (Aberdeen) described the value of vitamin A in the treatment of nasal sinusitis of children, a condition which appears to be on the increase The older treatment by weekly antral lavage is unsatisfactory, for in 60% of the cases suppuration recurs after apparent recovery Vitamin A given to cases with suppuration did not seem to influence the infective process, but it seemed to be highly effective in the pre suppurative stage A number of non-suppurative cases in which the typical thickening of the antral lining had been confirmed by X-ray examination were given vitamin A by mouth or by intramuscular injection and after one to six months only about 20% showed suppuration, while 80% of a group of similar control cases treated without vitamin went on to suppuration

Prof Noah Morris (Glasgow), discussing vitamin D deficiency, said that the classical type of rickets with its well-marked skeletal deformities has almost entirely disappeared in this country, but has left in its place a form of disease which is possibly more dangerous because it is not obvious Formerly, the earliest manifestations of rickets were thought to appear about the fifth month but now it is known that rickets may occur in the fœtus if the mother is suffering from calcium and vitamin D starvation He pointed out that while osteomalacia is most commonly associated with pregnancy and lactation, it may also be produced where there is insufficient intake or poor absorption of lime The non-pregnancy type may often involve the spine alone and is apt to be diagnosed as rheumatism Tetany may occur and there is often weakness and stiffness especially in the adductor muscles of the thighs

Dr Alexander Lyall (Aberdeen), in a paper on calcium and phosphorus deficiency and hypoproteinæmia, pointed out that primary nutritional disturbances of these types are very rare Nutritional hypoproteinæmia is infrequent, but may be associated with anorexia or pregnancy and sometimes with imbalance of chloride and fluid

Prof L S P Davidson (Edinburgh) reported an investigation he had carried out in Edinburgh on the hæmoglobin values in infants, children and pregnant women, and compared the results with those found in a similar investigation in Aberdeen a few years ago

Prof Henry Dryerre (Edinburgh) gave a lecture on deficiency diseases encountered in veterinary practice unted his pulse and was puzzled to find it only thirty le said nothing but went to the other side, only to find le same rate there The patient smiled at her and said, It is all right, nurse, in my case you add them both gether "

Mr Warren Low married in 1902 Mabel, eldest aughter of John Ashby, JP, of Staines, who survives im with two daughters and four sons

HUGH WOLFE CORNER

F C, M D ABERD, F R C P, ACTING GROUP-CAPTAIN R A F

THE death is now presumed of Group-Captain Hugh orner who has been missing since April 25 He was orn in 1898 and during part of the last war he served s a lieutenant in the Cameron Highlanders in France le graduated without loss of time om the University of Aberdeen 1922, and entered the Royal Air orce two years later He was ent to Iraq in 1925, where he erved for three years On his eturn home he was posted to ranwell Hospital, where he qualied as a pilot and in 1929 obtained is MD In 1933 he returned to raq for a further two years Then he came back he held a umber of appointments mostly dministrative, until he was posted n April of last year to headquarters of Fighter Command, for pecial duty in connexion with ying personnel and he was killed while flying on active ervice This last appointment gave Corner the opporunity to exercise his keen and critical mind in an nvironment which he loved, and he felt he had found is true vocation He was a keen pilot, particularly ond of high-speed, single-seater aircraft, and his enthuiasm for flying and profound knowledge of the practical roblems of aviation medicine made him an ideal nedical adviser for pilots Helpful and unassuming, harming and ever youthful he was the friend of all, but articularly of the men who fly

ERIC MACE FOSTER

M B BIRM, LIEUTENANT R A M C

Lieutenant E Mace Foster was accidentally drowned near Tobruk last March He was born in 1918, the son of Mr S Mace Foster of West Bromwich, and was educated at Wolverhampton Grammar School and the University of Birmingham He won many prizes as a student and when he graduated with honours in 1940 he was awarded the gold medal for clinical medicine He was then house-physician at the United Hospitals to Dr Oscar Brenner who writes · "Eric Mace Foster was a quiet, reserved, modest young man, but his obvious ability soon attracted his teachers' attention and interest His keenness and enthusiasm were a pleasure and a stimulus to them, for he approached his clinical work in the scientific spirit and was not readily satisfied with facile and superficial explanations His ready sympathy and human understanding gained him the respect and affection of his patients, his colleagues and the nursing staff" When the heavy air-raids on Birmingham began Foster was chosen to accompany patients to an emergency hospital outside the city and here he remained as house-surgeon and MO in charge of the ENT department until he joined the RAMC in July, 1941. He was sent overseas in January as deputy senior MO to a large troopship and on reaching the Middle East he was attached to a field ambulance

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Messrs BURROUGHS WELLCOME AND Co. can supply limited quantities of curarine for research workers

Notes and News

THE ATMOSPHERE OF BATTLE

THE Victoria Medico-Legal Society, now ten years old, has published a limited edition of its last three years proceedings (Melbourne Brown Prior Anderson Pty), containing nine lectures given to the society, seven by members They fall a little short perhaps of the average standard of lecture published in our own *Medico-Legal and Criminological Journal*, except for a refreshing original article from Sir Frank Egglestone, now Australian Minister to China ; his scholarly analysis of the social values of modern legal inquiry is a criticism of the atmosphere of battle in the courts in which cold scientific deduction and strict impartiality are bound to suffer It is summed up in the famous dictum of Mr Justice Maule

> Gentlemen if you believe the evidence of the plaintiff in this case you will no doubt find for the plaintiff If on the other hand you believe the evidence of the defence you will no doubt find for the defendant But if, like myself, you believe the evidence of neither God help you all Gentlemen of the jury you may now consider your verdict

Social progress deserves a more strictly impartial mode of legal inquiry and Egglestone sets out a design for its construction

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PRIORITY MILK, EGGS AND SOAP —The Ministry of Food has designed a composite medical certificate (R G 50) to take the place of the existing three separate ones for priority milk, eggs and soap, and also to provide for possible extensions of priority rationing The schedules of qualifying conditions still apply, and the doctor is asked to indicate clearly under which schedule a patient qualifies for each commodity No period or quantity need be stated, for the previous maxima are now standard The certificate has places for priority national dried milk and dried eggs, but these are for future use, as is section iii *d*, which will cover priorities as yet undreamt of outside the ministry The new certificate can now be got at Food Offices, but stocks of the old sort should be used up first

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University of Cambridge

On Aug 1 the following degrees were conferred

MD—*E W Hart and W A Law

MB, B Chir—*Philip Hugh Jones *David McAnally *G P Baker, *W E Church *H G Danziger *G E French *H D Juler *J M. S. Knott, *H E Lockhart Mummery, *L H H May, *J C Waterlow, *P H Buxton *P M Daniel *G H Dhenin *F S Glassow, *Allan Hulme, *R J Walker, V. R Arulanadom *B G C Ackner *P F Borrie, *J A B Gray, *E J Holborow *H W F Jones, *T D Kellock, *D S Short, *J F P Skrimshire, *J C Swanson *J R Thompson N J Goorney, H M J Rowan, *T O Candler *A G Eddison *E J Harrison, *D E R Kelsey, *Alan Lyell, *R. A Palmer *S H Purser, *D L Sandes, *J F. R Withycombe, J A V Bates, *W B Alexander, *A O Bech, *J A. Black, *N F Crofts *R E Danckwerts, *J H L Ferguson *J L Fluker, *J B Foote *R A Holden, *E B Jarrett *A G Leacock, *C M Phillips *P M M Pritchard *J H B M. Rowlands *H D Teare, *J B Wyon, R D Sweet, *R J K Brown, *N D Compston *P J R Deller, *F M Lancaster *K. T Lockhart, *R G Miller, *E C Poulton *E G Sita *R U Whitney *D I Williams, *C D Calnan, *D G R Fox *J S Pippard, *J R K Preedy, *F S Carter, *G F Green *A W N Oatway *T O Scudamore, *R H Wheeler Ian Macdonald *John Dean, *Raymond Dobson, *H G McQuade *R H Meara, *W E S Bain *T L T Lewis *David Rice, J G Salter, *N L Birkett *B F Brearley *E G A Crawshaw, *J A Peters, *J F P Quinton *P K Renshaw, *J K Wagstaff, *R B. Welbourn, E C E Golden, *M R Jeffrey, *H M Lawson, *C. R Naish W S S Ladell *H P König *L. R McLaren, *J J Wild, *H I Winner, R. W Danziger and R G Mathers.

* By proxy

Titles of the degrees of MB, BChir have been conferred on the following women. A Bolton, P Eskell, F. H Lomax and M L Macalister The title of MB was also conferred on C M Hall

Royal Free Hospital

The A M Bird postgraduate scholarship in pathology has been awarded to Dr Frances Bosanquet

Shortage of Rubber Gloves

The sale of household rubber gloves has been restricted to people who are certified by a doctor to be suffering from long and intractable eczema, cheiropompholyx, or intractable dermatitis, and to need rubber gloves for the performance of their household duties

ANÆSTHETIC MORTALITY

SIR,—May I make a constructive suggestion to lessen what many people have an uneasy feeling is an avoidable mortality-rate As long ago as 1910 a Home Office departmental committee issued a report containing certain recommendations which have never been implemented, though it seems impossible to find an adequate reason for this neglect Before any real improvement in mortality figures can be expected some means of recording these fatalities must be arrived at Years ago I put before the council of the Association of Anæsthetists a proposal that, where a death under anæsthesia or within an hour or two of operation occurred in any voluntary or municipal hospital, the matter should be reported to a small committee consisting of a physician, a surgeon, an anæsthetist and a pathologist This proposal did not, however, find favour, as it was found that we were up against the Coroners Act—which many of us think is long overdue for reform Can nothing be done to stimulate medical and public opinion in this direction ?

Liverpool **G F RAWDON SMITH**

THE MUNICIPAL SANATORIUM

SIR,—*Your peripatetic correspondent* of Sept 5 seems to have been unfortunate in the municipal sanatorium he visited and somewhat hasty in the generalisations he makes As medical superintendent of a county-council sanatorium I can say that here are over 100 patients having collapse therapy out of just over 200 , that each patient has her own thermometer and takes her own temperature, that routine instructional talks are given, besides individual talks , that occupational therapy is regularly carried out under a trained instructress ; and that a first-class thoracic surgeon visits here at least once a week for operative work A dentist and an ENT surgeon also visit regularly. This is only one of a considerable number of municipal sanatoria personally known to me where such work is being done

Pinewood, Wokingham **WILLIAM C FOWLER**

SIR,—Delightful as the commentaries of your peripatetic correspondents are, I cannot allow the prerogative of the pulpit to the gentleman who wrote about *Walking Miracle* and the " Balliol of sanatoria," much as I admire the latter Municipal sanatoria as large or larger than Midhurst have no reason to fear comparison with private institutions I know many, besides the one in which I work, in which the standard of treatment is excellent Perhaps, though, if we could give each of them a private income, we should be even more successful in teaching our patients " how to live "

One word more Where do these sweeping condemnations of the tuberculosis service spring from ? Surely from something less than adequate knowledge Perhaps your correspondent would like to see a *second* municipal sanatorium I should be glad to show him what is done here

Colindale, N W 9 **J V HURFORD**

*** Other correspondents have expressed a willingness to supplement our peripatetic's neglected education — ED L

RECOVERABLE SCHIZOPHRENIA

SIR,—In your issue of Sept 5 Dr Sargant agrees with Dr Hemphill that convulsive therapy is not a satisfactory treatment of schizophrenia and cites the experience of the New York State Hospital where a thousand schizophrenics treated with convulsive therapy did even worse than an equivalent control group left untreated And there is much more in condemnation of the method If it is suggested that insulin has been superseded by convulsive therapy I heartily agree with Dr Sargant that general acceptance of this view would be disastrous for the patients concerned I have for many years advocated the use of insulin combined with histamine

Salisbury **HORACE HILL.**

THE *Notes on Essential First-aid* by Brigadier E M Cowell, referred to in our leading article of Aug 22 (p. 221), was originally printed for private circulation only, but copies can now be obtained, price 6d , from Couldrey & Co Ltd , George Street, Croydon, Surrey

Obituary

V WARREN LOW

CB, MD LOND, FRCS

NEWS of the death in London of Mr Warren Low on Sept 2 in his 75th year will have brought a pang to many hearts To the St Mary's school into which he had grown as teacher, surgeon and governor To the College of Surgeons who made him a vice-president, and the many other professional bodies to which he gave whole-hearted service To those who came to rely on the judgment, both as surgeon and man of affairs, which enabled him to make the correct choice without loss of time To numberless others just passing by whose heart was beguiled without their knowing

Vincent Warren Low was born at Staines in 1867, was educated at Cranleigh, and entering St Mary's took all available scholarships and qualified in 1892 with distinction at the BS exam Before climbing the customary tree to the surgical staff at St Mary's he filled a long series of children's appointments at Great Ormond Street and volunteered for the South African War where he won the Queen's medal and was mentioned five times in dispatches, and where he contracted the dysentery that led to the crippling arthritis of which he was never heard to complain On his return he was elected assistant surgeon to the Great Northern and from 1902 he served his allotted term as full surgeon to St Mary's, on retirement being awarded the rare compliment of a hospital vice-presidency. He was a sound surgeon, preferring safety to brilliance, and showed great skill in diagnosis and discernment in treatment, qualities which stood him in good stead as consulting surgeon to H M Forces in the Dardanelles and Egypt 1915–16 when he held the honorary rank of colonel AMS This work gained him the CB

Cotz

Low was elected in 1916 to the RCS council and his work for the college gave him much satisfaction . in 1925 he was re-elected for a second term during which he held a vice-presidency for a decade In 1914 he joined the Society of Apothecaries, of which he became junior warden, never missing a meeting of the court His faithful attendance at medical societies inevitably led to his becoming president of the Royal Society of Medicine and also of the Medical Society of London He was an excellent committee-man and for many years served on the senate of London University and on the council of King Edward's Hospital Fund for London He enjoyed examining for several universities and examinees almost enjoyed his humorous quizzing

Summing up Low's humanity one of his friends writes of him as the ideal good companion ; he loved a chat and delighted in telling a good story At the quarterly court of a benevolent society he presided from the hearth-rug rather than from the chair and preferred to spot the *mot juste* of others rather than say it himself Another writes of his discriminating judgment in the matter of food, both of the mind and the body His taste in literature centred in memoirs and modern history , he was not interested in thrillers or the lighter forms of fiction He was critically interested in art, in which no doubt he was influenced by his gifted wife, a painter of eminence He was an expert of the cellar and the table, not because he was a gourmet, his wants being simple, but to give pleasure to his friends On public occasions he showed great powers as a host For many years he arranged the annual dinners of his medical school, and also those of the RCS council dining club He was a witty after-dinner speaker when his prodigious memory of bygone exploits was often a surprise to their perpetrators A keen mason and past master of his hospital lodge he was in 1929 appointed past grand deacon of the grand lodge of England The irrepressible humour which had so often relieved dull routine did not fail in his last illness A probationer

THE THOMAS SPLINT
IN THE TREATMENT OF FRACTURED FEMUR

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THIS paper is based on experience gained over a period of 8 years, during which over 200 fractures of the shaft of the femur have been treated, most of them at Walton City Hospital, Liverpool. The method which will be described is that of fixed skin traction using the splint devised by Hugh Owen Thomas. This method has produced a high standard of functional result.

In the treatment of any fracture the method which is ultimately decided on as the best is the result of a compromise by the surgeon in an attempt to achieve the maximum degree of each of the following: accurate reduction of the fracture; immobilisation of the fragments; maintenance of function of the limb until the fracture has united. Taking fractures as a whole, there seems no doubt that, other things being equal, those fractures which are most accurately reduced will produce the best functional result. Trauma by treatment, however, while producing an excellent anatomical position as demonstrated by X rays, may introduce some additional complication which reduces the functional value of the result.

In treating fracture of the femur, surgeons during the past few years have sought to achieve full length in the limb by means of positive skeletal traction applied either to the upper end of the tibia or to the lower end of the femur. Excellent anatomical reposition can be obtained by skeletal traction, but often only at the expense of stiffening of the knee. In any method of treating this fracture the surgeon's main difficulty in the later stages is that of knee movement. In my opinion the method to be described offers the quickest return of useful knee movement coupled with adequate anatomical reposition. In patients up to about 20 years, there is little difficulty in achieving full length without prejudicing the return of knee movements. The difficulties are greater in those muscular healthy men between the ages of 20 and 55 in whom it is not easy to achieve full length without producing a degree of stiffness of the knee which may take many months of treatment before movement reaches 90°. Too much importance has been attached to the achievement of full length; in recent years surgeons have even been encouraged to distract the fragments sometimes, thus producing non-union.

Treatment of a fracture of the shaft of the femur, entirely apart from anatomical reposition, must be regarded as unsuccessful if knee movements have not reached 90° within 12 months, and it should only be regarded as successful if that degree of movement is achieved within 9 months; 90° of knee movement is chosen as the arbitrary dividing line between success and failure because it is the amount of movement necessary for a working man to climb ladders and steps. Provided in the end the patient has at least 90° of knee movement the amount of shortening, if less than ¾ in., is relatively unimportant. The limp resulting from shortening of the femur up to ¾ in. can be overcome by a shoe or boot with a raised heel.

TECHNIQUE

Anæsthesia.—Full relaxation of the muscles of the injured limb is essential, so that the fracture may be reduced and length obtained at the earliest possible moment. The method is used to maintain reduction carried out during the anæsthesia and not to produce slow reduction of the fracture by traction. My preference is for spinal anæsthesia, but in cases where the patient is in a state of shock open ether is probably the best form of anæsthetic.

The Thomas splint.—Since Thomas first described his original splint there have been numerous modifications and "improvements," none of which is as good as the original Thomas, with its fixed ring at the upper end and its wrought iron sides. Spring steel and expanding sides or ring give no advantage. It is of course necessary to have a fairly large selection of different sizes of splints, but an exact fit is not necessary in every case. The relationship of the upper ring of the Thomas to the bony pelvis is important. Counter-traction must be upon the ischial tuberosity, and the relationship of the inner posterior segment of the ring must be carefully maintained in respect of that bony part. In general, the ring is kept in position by the accuracy of the fit to the outer side of the thigh, and where the ring is only a little too large apposition may be maintained by a cotton-wool pack between the outer anterior part of the ring and the skin of the thigh about 1–1½ in. distal to the anterior superior iliac spine. An alternative method of maintaining the ring in its proper relationship to the tuber ischii is by the use of the Balkan beam with a weight and pulley attached to the anterior part of the ring so that it is lifted from behind on to the ischial tuberosity. If a ring which is much too large has to be used, the Balkan beam, weight and pulley method is the only one which will maintain the ring in its proper position in relation to the ischial tuberosity. Should the ring for any reason slip into the perineum, the point of counter-traction is changed, shortening is produced, increased tension of the traction tapes is extremely painful, and nursing care more difficult to carry out. The buff leather covering the felt around the ring becomes dirty after being used on a case, and may be softened by massaging with castor oil. 'Sorbo' rubber padding is not an improvement. The distal end of the splint should project ideally about 6–8 in. beyond the patient's foot, but there is no objection to variations in length between 5 in. and 9 in.

Preparation of the leg.—The limb is washed, shaved, cleaned with ether or spirit, dried and powdered, and the powder is then dusted from the skin.

Reduction of the fracture.—All the time the Thomas is being applied, the patient's foot is held in traction by an assistant who has no other duty. Often continued traction will be all that is necessary to achieve reduction when the patient is fully anæsthetised. Sometimes the upper fragment tends to ride forwards over the lower fragment and manipulation by the surgeon to correct this is often necessary. The surgeon can correct this displacement by flexing the site of fracture, usually not more than about 40°. In a transverse fracture the ends can commonly be locked and the fragments then aligned, while in an oblique fracture the pads which hold the upper end of the lower fragment well forwards must be relied on to maintain reduction. When the patient is fully anæsthetised the ring of the Thomas is slipped over the foot held by the assistant and passed to the top of the thigh. The distal end of the Thomas is then allowed to lie on the table and the limb is raised about 9 in. from the table while the traction tapes are applied.

Traction tapes.—I have found 'Elastoplast' extension plaster to be most useful for traction tapes. This plaster is not extensible in both directions: *longitudinally* it is quite rigid, but transversely it is capable of stretching and it may thus be applied easily to the varying curvature of the knee and thigh. At its upper end it should reach to about 2 in. above the fracture. The lower end is stitched carefully to a piece of strong non-extensible tape about ¾ in. wide and 18 in. long. In applying traction to the limb a start should be made at the distal end and the point of junction between the tape and extension strapping should be about 1 in. *proximal* to the malleoli. To prevent the tape from abrading the skin of the malleoli a layer of thin wool is wrapped round the ankle. The elastoplast extensions are applied one on each side of the limb, the outer one being ¼–½ in. more posterior than the inner one, so that when the traction *is finally* fixed there is a continual slight drag tending to keep the limb from falling into a position of external rotation because of the weight of the foot. The elastoplast extensions should not overlap at any part. There must be behind and in front a portion of skin never less than 1 in. wide to which there no traction strapping is attached. Failure to allow for this may lead to the development of a troublesome œdema around the ankle. When the traction strapping has been applied it is lightly bandaged by using a 3 in. cotton bandage. There must be no circular bands of strapping "to prevent the extensions slipping"; they cause œdema. Provided this method of traction is used only to maintain reduction and not to achieve reduction it is seldom necessary during the

Medical Honours

The following honours have lately been awarded to medical men

CBE —Brigadier (actg) G F Allison, MC, LRCPI, late RAMC, and Brigadier (temp) Joseph Walker, MC, MB EDIN , late RAMC

OBE —Brigadier (actg) R R G Atkins, MC, MD DUBL , RAMC , Colonel (temp) J S K Boyd MB GLASG , RAMC , Major (temp Lieut Colonel) Kingsley Fletcher-Barrett, FRCS, RAMC , Colonel (temp) H V Leigh, MD DURH , RAMC , Colonel (temp) G S McConkey, MD DUBL , RAMC , Temp Surgeon Lieut Commander H G Rees, MRCS, RNVR , and Colonel (temp) R F Walker, MC, MB BELF , RAMC

MBE —Captain (temp Major) P B Ascroft, FRCS, RAMC , Captain (temp Major) W R Day, RAMC , Temp Surgeon Lieutenant P W Isaac, MB CAMB , RNVR , Captain (temp Major) W A Oliver, MRCP, RAMC , Captain (temp Major) L S Rogers, FRCS, RAMC , Captain (temp Major) H B Stallard, FRCS, RAMC , and Temp Surgeon Lieutenant C H F Wood, MB CAMB , RNVR

DSC —Surgeon Commander Lionel Lockwood, MVO, MD MELB , RAN

Prisoners of War

The following RAMC officers have been posted as prisoners of war

WS/Captain H L Cleft, MB EDIN , WS/Captain W K Frewen, MRCS , Major D A Macpherson, MB EDIN and WS/Captain A P Russell, MB EDIN

Epsom College

The council of Epsom College will in December award a France pension of £30 p a to a necessitous medical man, fully 55 years of age, who has been registered for 5 years, and who is in need of help Forms of application may be had from the secretary's office, Epsom College, Surrey, and must be completed and returned by Oct 19

Harben Lectures

Prof J C Drummond, DSc, scientific adviser to the Ministry of Food, will deliver the Harben lectures for 1942 at the Royal Institute of Public Health and Hygiene, 28, Portland Place, London, W 1, on Monday, Oct 26, Tuesday, Oct 27 and Wednesday, Oct 28 at 3 PM His subject will be problems of war-time nutrition

Chadwick Public Lectures

On Tuesday, Oct 6, at 2 30 PM the first lecture in the autumn programme of the 30th annual series of these lectures is to be given at 26, Portland Place, London, W1, when Sir Leonard Hill, MB, FRS, will speak on The inter relation of clothing and shortage of fuel in matters of health

Before the lecture, at 2 15 PM, Sir William Collins, chairman of the trustees, will present the Chadwick medal and prize to Mr Wilfred Glyndon May, of University College, London

Royal Sanitary Institute

A meeting of the institute will be held at Oldham on Saturday, Sept 26, at 10 15 A M, when Dr E R Peirce, senior assistant port medical officer for Liverpool, will read a paper on the control of sea and air borne disease

Studentship in Experimental Psychology

The Medical Research Council invite applications from medically qualified women for a studentship for training in methods of experimental psychology, preference will be given to candidates who have had some special training in physiology or neurology, or who have already had some experience in the use of research methods The studentship will be tenable for six months during which the holder will receive training under the direction of Prof F C Bartlett, FRS, at Cambridge Payment will be at the rate of £350 per annum and the student will be expected to give her whole time to the work The award will be made with a view to possible opportunities for research into problems arising during the war, either in the services or in industry, but no definite promise of employment after the expiry of the studentship can be given Applications should be lodged with the secretary of the council, c/o London School of Hygiene, Keppel Street, London, W C 1, by Oct 5

The 114th annual meeting of the Medical Charitable Society for the West Riding was held at Leeds under the presidency of Dr T Wardrop Griffith on July 23 Since 1828 the society has distributed over £111,000 This year 12 grants, amounting in all to £1868, were made

Infectious Disease in England and Wales

WEEK ENDED SEPT 5

Notifications —The following cases of infectious disease were notified during the week smallpox, 0 , scarlet fever, 1472 , whooping-cough, 1197 , diphtheria, 787, paratyphoid, 13 , typhoid, 7 , measles (excluding rubella), 3024 , pneumonia (primary or influenzal), 379, puerperal pyrexia, 198 , cerebrospinal fever, 73 , polio-myelitis, 24 , polio-encephalitis, 4 , dysentery, 112, ophthalmia neonatorum, 94 No case of cholera, plague or typhus fever was notified during the week

Deaths —In 126 great towns there were no deaths from enteric fever, 1 (0) from scarlet fever, 3 (0) from measles, 11 (1) from whooping-cough, 14 (0) from diphtheria, 52 (6) from diarrhœa and enteritis under two years, and 3 (1) from influenza The figures in parentheses are those for London itself

The number of stillbirths notified during the week was 200 (corresponding to a rate of 32 per thousand total births), including 23 in London

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Messrs BRITISH DRUG HOUSES are prepared to supply S methylisothiourea sulphate free of charge to any clinician who wants to make a trial of this compound on the lines suggested by Smirk and McGeorge in their paper of Sept 12 It is available for this purpose in ampoules containing 2 ml of a 10% solution for intravenous injection

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The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

Appointments

Colonial Service —The following appointments are announced

ALLEN, R A , MB LPOOL MO, Gold Coast
FORSHAW, H W , MB LPOOL MO, Nigeria
GILLESPIE, J E , MD DUBL , MRCPI, DPM MO, Trinidad
MOTT, G A , MB CAMB MO, Gold Coast
NICHOLSON, J A B , MB LPOOL MO, Nigeria
REED, H N , MB MO, Tanganyika Territory
SAMUEL, G N , MB MO, Sierra Leone
ROBERTS, M A W , MB DUBL , FRCS Surgical Specialist, Nyasaland

Births, Marriages and Deaths

BIRTHS

BURNS —On Sept 2, Dr Angela Burns (*née* Ricardo), wife of Dr Benedict De Lisle Burns, of Oxford—a son

FRASER —On Sept 6, the wife of Mr Donald Fraser, FRCS—a daughter

HEATON —On Sept 11 in London, Dr Winifred M Heaton (*née* Farmar) wife of Major Richard Heaton, Duke of Lancaster's Own Yeomanry—a son

LLOYD —On Sept 9, at Cheltenham, Glos, the wife of Major J P F Lloyd, RAMC—a daughter

MCINTOSH —On Sept 6, at Inverness, the wife of Captain D G McIntosh RAMC—a daughter

MILNE —On Sept 6, the wife of Dr K J G Milne, of Sheffield—a son

NAISH —On Sept 7, in Edinburgh, Dr Nora Naish wife of Surgeon Lieutenant J M Naish, RNVR—a daughter

TEARE —On Sept 8, in London, the wife of Dr Donald Teare—a son

MARRIAGES

BENNETT—ALLCHIN —On Sept 5, at West Acton, H W D Bennett to Margaret Betty Allchin, MRCS

DAVIES—EMMETT —On Sept 5, at Kirk Ella East Yorks Donald Henry Davies, BM, surgeon lieutenant RNVR, to Mavis Eileen Emmett, WRNS

DUGGAN—MACKINTOSH —On Sept 9 at Oban George Franc Duggan, FRCSE of Shotley Bridge, co Durham, to Helen Kilgour Mackintosh

DEATHS

BROWN —On Sept 12, Thomas Henry Brown, MB CAMB, of Streatham

COMPTON —On Sept 9 in London, Alwyne Theodore Compton, FRCS of Seaton, Devon

HOPKINS —On Sept 10, at Mickleover Derby Edwin Lancelot Hopkins, MC MRCS, DPH , DPM aged 53 years

O CONNELL —On Sept 4, Arthur Patrick O Connell, LRCPI , of Leed

RYAN —On Aug 28 at Port of Spain Trinidad B W I William Astle Ryan, MB DUBL, surgeon lieut commander RN (ret)

When pain on straining the site of fracture has almost disappeared the test of weight-bearing may be begun, at first under careful clinical supervision day by day Usually weight-bearing is possible with safety at about the 20th–24th week Not until the danger of angulation at the site of fracture is past should there be any passive movements at the knee-joint, in general, where passive movements are used at all they should be carried out under anæsthesia and by the surgeon in charge of the case—that is, they should take the form of a manipulative breakdown of knee adhesions Anæsthesia for the manipulation should be full In most cases simple gas anæsthesia does not produce an adequate relaxation of the thigh muscles This passive manipulation of the knee is required in about 30% of cases in order to develop knee flexion to fully 90° Once the knee flexion has been developed to this extent the development of further movement is influenced almost entirely by the man's own efforts, and seems to depend more particularly on the nature of his work For instance, a collier, before he can do his work properly, requires to have a knee in which there is almost normal flexion, but in many forms of occupation the man expresses himself as completely satisfied with knee flexion when it has reached about 110°, and finds that the disability does not constitute an incapacity for work In general, this stage of recovery is expected to be reached after about 32–36 weeks, and a case in which this degree of recovery is not achieved by the end of a year is regarded as slow

X rays in this method of treatment are used merely to check the position of the fracture Maintenance of length may be determined quite satisfactorily by measurement taken between the anterior superior iliac spine and the internal malleolus Angulation can be corrected by the insertion of wool pads or alteration in the size of the wool pads inserted between the limb and one or more of the splints Little regard is paid to X-ray shadows in determining the time for weight-bearing, which is assessed on purely clinical grounds

Complications—Loss of length of more than ¾ in indicates a failure in technique—a lessening of the traction and immobilisation at some time after the reduction of the fracture and during the first six weeks If length has been maintained during that time, shortening hardly ever occurs In general, one expects the amount of shortening to be less than ½ in, lengthening up to ½ in may be produced by too enthusiastic tightening of the traction tapes in children

Angulation at the site of fracture may be due either to failure to correct angulation by means of wool pads or to an improperly fitting calliper which has allowed the limb to bear weight too early I have not seen a case of non-union with this method The prevention of pressure sores does not require any special skill, provided the nurse is willing to carry out the necessary regular attention to the skin Incontinence does not necessarily imply the certain development of pressure sores where adequate nursing care is given

SUMMARY

In the treatment of a fracture of the shaft of the femur early and adequate recovery of knee movement is more important than loss of length up to ¾ in

In using a Thomas splint with fixed skin traction, the most important points in technique are as follows. the fracture is reduced under full anæsthesia and the skin traction is used only to maintain reduction, traction is maintained with the knee-joint kept in 10° of flexion by means of wool pads and a back splint, counter-traction is upon the ischial tuberosity

The use of the Balkan beam greatly facilitates nursing care, and helps to maintain general muscular function of all the limbs and the comfort of the patient.

BRONCHOGRAPHY IN CHILDREN

C ELAINE FIELD, MD LOND, MRCP
FIRST ASSISTANT TO THE CHILDREN'S DEPARTMENT AT
UNIVERSITY COLLEGE HOSPITAL, LONDON

SINCE the introduction of iodised oil as a method of investigating the bronchial tree by Sicard and Forestier (1922) many different techniques have been described In the adult satisfactory bronchograms are obtained by the endotracheal method described by Forestier and Leroux (1923) using local anæsthesia for the skin and cocaine in the trachea. This method was first applied to children by Armand-Delille (1924) but most children have a dread of the needle, and lack of cooperation with crying and coughing causes iodised oil to enter the alveoli of the lung or be coughed up and swallowed, with unsatisfactory bronchographic results This may be overcome by the original supraglottic method in which the patient puts out his tongue and the iodised oil is dripped over the back of it (Sicard and Forestier 1922 and 1932) or by the nasal method (Forestier and Leroux 1935), in which the tongue is pulled forward and the oil is dripped through the nose In both these techniques local anæsthesia must be used, children are rather sensitive to cocaine and its equivalents in any quantity, and unless cooperation is really good the oil passes down the œsophagus rather than into the trachea Bronchography under general anæsthesia is more suitable for children but so far I have failed to find an anæsthetic that is thoroughly satisfactory. Chloroform gives the best pictures but is too dangerous, especially since the child must be sat up during the procedure Nitrous oxide causes increased respiratory excursions with the result that the iodised oil enters the alveoli of the lung and obscures the picture Open ether is the anæsthetic of choice but has the disadvantage of causing excessive secretion in the bronchi, especially in areas of bronchiectasis, which may prevent the oil from entering that part of the bronchial tree about which information is specially desired This disadvantage can be overcome to a certain extent by giving adequate doses of atropine beforehand Jacoby and Keats (1938) advocate ether anæsthesia and the supraglottic method and Barsby and Bonham-Carter (1941) recommend ether with the nasal method Basal narcotics and hexobarbitone have the disadvantage that they fail to abolish the cough reflex

To overcome these difficulties a technique has been devised which abolishes consciousness of the prick of the intratracheal needle but leaves the child fully conscious during the introduction of the iodised oil Excellent bronchograms can thus be obtained, and subsequent bronchograms are easier to take because the child, having suffered no pain, is not apprehensive

TECHNIQUE

The child undergoes preparatory tipping and breathing exercises until the moist sounds in the chest are greatly reduced and the quantity of sputum diminished On the day of examination, breakfast is omitted and twenty minutes before the operation min 5–10 of 'Nepenthe' (Ferris) are given Tipping is continued until the patient is sent for, and on arrival in the X-ray room the procedure is explained to the child and a rehearsal of the positions required is carried out (these will be described later) To give the child no time to develop fears a quick gas and oxygen anæsthesia is administered and the special needle (fig 1) is introduced through the cricothyroid membrane As soon as the operator is certain, on withdrawing the stilette, that the needle is in the trachea, the child is allowed to come out of the anæsthetic A hissing noise during respiration, or the withdrawal of air into a syringe are signs that the needle is in the trachea As consciousness is being regained, min 5–10 (according to the age of the child) of 2% butethanol ('Decicain') is injected through the intratracheal needle, the patient usually coughs and sprays the solution over the bronchi The iodised oil is injected when the patient has fully recovered from the anæsthetic During the next procedure the child, while encouraged not to cough, is kept well tilted to the side that is to be filled until the X rays have been taken

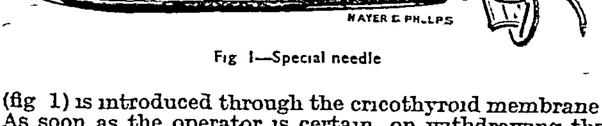

Fig 1—Special needle

course of treatment to change the traction strapping because of slipping

Back splints and side splints —The use of a back splint is essential It should reach almost up to the fold of the buttock and down to a point about 1–2 in proximal to the internal malleolus Its ends must be well padded , I use thin adhesive felt over each end and on top of that a layer of cotton-wool Two side splints for the thigh are an advantage but not always essential The inner one should be short enough to reach down almost to the internal condyle of the femur without its upper end bearing against the ring of the Thomas The outer splint should reach from just below the great trochanter to a point above the external condyle of the femur Their ends should also be well padded At the site of fracture a large wool pad between the back splint and the limb maintains the important normal anterior bowing of the shaft of the femur Where there has been some difficulty in correcting anterior displacement of the upper fragment this pad may appropriately be disposed just distal to rather than precisely at the site of fracture, thus holding forward the upper end of the distal fragment A second woollen pad, placed behind the knee-joint, is of such a size that when the splints are strapped in position the knee-joint is immobilised in about 10° of flexion this is most important Observation has shown that where the limb is immobilised with the knee in full extension there is always great difficulty in restoring knee movements Where the knee is immobilised in a little less than full extension the development of knee movements is subsequently comparatively easy I believe this is because the last few degrees of extension of the knee-joint are associated with internal rotation of the femur on the tibia By using a pad of wool to immobilise the knee in 10° of flexion this locking of the knee-joint is avoided, and when the patient subsequently begins to develop knee flexion he can apply the full flexing power of the hamstrings

When the straight splints are ready for application, and while the assistant is still maintaining traction on the foot raised about 9 in above the splint which is lying on the table, the surgeon carries out the manœuvres necessary for complete reduction of the fracture and the splints and pads are then applied The splints are held in position by 2 in wide adhesive strapping encircling the limb at four levels The two pieces of strapping above the knee should be disposed so as to avoid causing any displacement of the fracture , their positions vary according to the level of the fracture The error to be avoided is that of putting tight strapping just below the fracture and so producing backward displacement of the upper end of the lower fragment The other two pieces of strapping are placed one at the level of the tibial tuberosity and the other near the distal end of the back splint The strapping should not, at any part, be adherent to the skin , a thin layer of cotton-wool is placed under the circular bands to prevent them adhering to the skin The limb is therefore in a tunnel of splints which do not impede traction

The splinted limb is now lowered upon the Thomas, and is supported in the splint by three double layers of flannel, 6 in wide, fastened by paper clips or safety pins at the outer side The sag of the slings should be arranged so that about two-thirds of the diameter of the limb is anterior to the plane of the Thomas splint While the assistant continues to maintain traction on the foot, the tapes are passed round the sides of the Thomas and fastened over the notch at the distal end The limb may now be bandaged together with the Thomas, by a flannel bandage reaching from the ankle to the upper part of the thigh There is no need to use any appliance for preventing foot-drop The foot is kept from dropping by the often repeated muscular efforts of the patient Foot-drop should not develop unless the injury is complicated by a nerve palsy, in which case some appliance is necessary

The Balkan beam greatly increases the mobility of the patient in bed, so that he may sit up or lie down at his own convenience It provides a means of exercising not only the injured limb but all the limbs, and is of great assistance in keeping the ring of the Thomas in its proper position in relation to the ischial tuberosity Nursing care is greatly simplified by its use In Walton Hospital, for the sake of uniformity, a fractured femur is always treated in a Nesbit-Evans bedstead using the Nesbit Evans bed crane, the vertical limb of which is used as a support for the horizontal beam of the Balkan frame The Thomas splint should be slung from the beam by two attachments only, one to the front of the ring of the Thomas and the other to the distal end of the Thomas The balancing weights are such that the patient can easily raise and lower the limb If a patient must be urgently transferred to another hospital—which happens oftener under war conditions than it did in peace-time—the fixed-traction method permits of transport without loss of position of fragments It is only necessary to cut the attachments of the Thomas to the Balkan beam

Nursing care —Pressure points which require to be treated regularly are at the upper and lower ends of the back splint , in the neighbourhood of the ankle and heel, and on the skin around the upper part of the thigh adjacent to the ring During the first two or three weeks the skin over the ischial tuberosity just below the anterior superior iliac spine must receive attention every four hours, night and day The task does not require any special skill, but it must not be neglected The skin is cleaned, dried, dusted and pulled by the fingers so that every few hours a different area of skin takes the pressure of the ring Approach to the skin over the ischial tuberosity is easy if the uninjured limb is well abducted while the injured limb is raised If the skin over the ischial tuberosity is allowed to get so sore that the pressure of the ring is too painful for the patient to bear, the method has failed and the surgeon must adopt some form of weight traction which does not, in my experience, give so high a general level of results It is the nurse's duty often during the day to instruct the patient to dorsiflex the ankle For the first few weeks the traction tapes should be tightened if necessary every eight hours, so as to keep a continuous drag on the limb Usually after the sixth week the amount of traction can be decreased and it is merely necessary to keep the traction tapes taut

Maintenance of function , weight-bearing —The patient is encouraged to contract the thigh, calf and anterior tibial muscles throughout the whole treatment Use of the Balkan beam and bed crane makes it easy to encourage the use of the muscles, and from the day after the application of the splint the patient should be able to sit up to take meals

In general, the limb must be kept in the Thomas for about ten weeks, when the patient may begin to walk in a calliper The actual change from the Thomas splint to the calliper is made when the fracture has united sufficiently to sustain the weight of the limb, but not soundly enough to bear the weight of the body Tenderness and pain on straining the site of fracture should be slight , a good rough test is to observe the patient's ability or otherwise to lift the unsplinted limb from the bed without pain at the site of fracture

A well-fitting calliper is important, in the form of a Thomas splint with the distal ends bent and implanted in a brass tube inset in the heel of the boot The tube should be about in the middle of the heel but sloping from within outwards in a forward direction at an angle of about 15° This slight angulation of the tube prevents the toes turning inwards during walking Great care should be taken about the fitting of the ring so that there is no possibility of it slipping from the ischial tuberosity The sides of the calliper should be of such a length that the limb does not bear weight, and the space between the man's heel and the upper surface of the heel of the boot should be about ¼ in A patient describes the feeling of wearing a correctly fitting calliper "It is as if I am sitting on the ring" The boot into which the calliper is fitted should preferably be of soft leather or cloth, so that it can be worn with the calliper without discomfort in bed The patient sleeps and walks in the calliper and boot, usually for three or four weeks until union is sound enough to allow of active knee movements without pain at the site of fracture When union has reached this stage the calliper may be given up at night and for three or four periods of half an hour each during the day while the patient practises active knee movements cricothyroid membrane In all cases the neck should be extended by placing one pillow under the shoulders , too much extension flattens the trachea and makes introduction of the needle difficult The first prominent cartilage in the child is the cricoid and the needle is introduced into the V-shaped notch above this , it is a good practice to feel the child s neck while he is still in the ward and also just before the operation, so as to be thoroughly familiar with the anatomy There should be no ill effects afterwards and usually the child can have a full meal when the action of the butethanol has worn off

The aim of the operator should be to outline, not fill, the bronchial tree with iodised oil—which should reach just to the alveoli without entering them Only one lung should be filled (fig 4) so that a clear lateral picture can be obtained Usually after 3 weeks of tipping this lung has cleared sufficiently of iodised oil for the other side to be filled

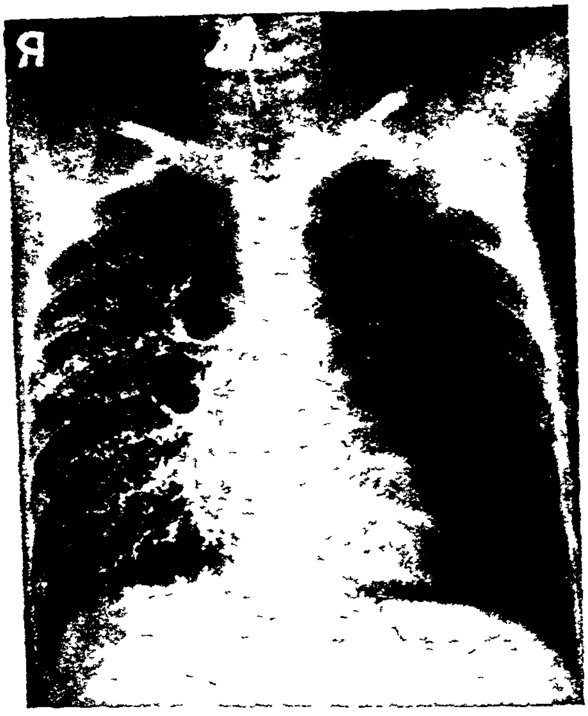

Fig 4—Anteroposterior radiogram , one side filled

SUMMARY

A new technique of bronchography in children is described in which they are anæsthetised with nitrous oxide, while a special intratracheal needle is introduced During the injection of the iodised oil no anæsthetic is administered, since the best bronchograms are obtained in the fully conscious patient

The method is suitable for children aged 5 years and over For infants under 5 the less satisfactory method with open ether anæsthesia is used

A war-time tipping board made with simple materials is described

I wish to thank Dr W J Pearson, physician to the children's department at University College Hospital, and Dr W G Wyllie at the Hospital for Sick Children, Great Ormond Street, for their help, and Dr H N Webber for his advice on anæsthetics

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SULPHAPYRIDINE ANURIA

A FATAL CASE

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IT is now admitted that one of the chief disadvantages of sulphonamide therapy is the tendency for these drugs to give rise to renal complications Sulphanilamide itself, on account of the relatively high solubility of both the drug and its acetyl compound, is almost entirely free from this tendency, but hæmaturia and more severe renal damage have been noted with sulphapyridine and sulphathiazole Recent reports indicate that sulphadiazine treatment is not free from similar risks The published work on this subject, mostly American, has been reviewed by Peterson and Finland (1941) From this it appears that various degrees of hæmaturia are common with all the sulphanilamide derivatives, but in most cases there is no evidence of permanent renal damage

A few cases of sulphapyridine anuria with recovery have been reported in this country (Leedham-Green 1941, Rogan and Cruikshank 1942, Laird 1941, Spence 1941) and the clinical findings in a fatal case have been given by Fletcher (1941) The only report including autopsy findings we have seen in the English journals is that of Whitehead (1941) The case recorded here showed hæmaturia followed rapidly by anuria, confirmed at autopsy as being due to blockage of the ureters with acetylsulphapyridine

CASE-HISTORY

A man, aged 43, was admitted to hospital on May 30, 1942 Five days previously treatment with sulphapyridine had been begun for lobar pneumonia He was given an initial dose of 2 g followed by 1 g every four hours, receiving in all 22 g On the day before admission the urine was scanty and blood-stained and sulphapyridine was discontinued He then complained of pain over the bladder and no further urine was passed Severe pain in the hypogastrium and the tip of the penis were present on admission He was quite rational at the time of examination but was reported to have been delirious occasionally The skin and mucous membranes were pale, the tongue dry and furred Temperature 98° F , pulse rate 88 and respirations 28 per min , blood-pressure 130/80 mm Hg Slight retraction of the abdomen, which was tender over the whole of the lower half , no loin tenderness , *no œdema* , fundi normal A catheter was passed quite easily but no urine was obtained on this or two subsequent occasions Fluids were taken freely by mouth and he received 3000 c cm. by intravenous drip, partly 5% glucose saline and partly 4 28% sodium sulphate On the next day the pain was less severe but the abdomen became more distended and he vomited 10 oz of fluid Although he was rather drowsy consciousness was maintained until shortly before death, 40 hours after admission to hospital, no urine having been passed for 60 hours Twitching of the extremities was not noted at any time The blood urea 3 hours before death was 100 mg per 100 c cm

At *autopsy*, 24 hours after death, findings were as follows Heart (284 g) a few petechial subendocardial hæmorrhages in the left ventricle Lungs about 200 c cm of slightly bloodstained fluid in each pleural sac , both lungs congested and lower lobes œdematous Liver (1247 g) smaller than normal , surface of coarse morocco leather type cut surface confirmed the appearance of multilobular cirrhosis Spleen (227 g) enlarged, firm, chronically congested Urinary tract kidneys showed similar appearances ; the general anatomy was not disturbed, there was no naked-eye evidence of acute nephritis, and stripping the capsule left a smooth normal-looking surface , on each side the pelvis and ureter were greatly dilated (right 0 75 cm , left 1 cm in diameter) and completely packed with blood-clot mixed with lighter, whitish particles , at the lower end of the ureters were some elongated masses which appeared to be almost entirely crystalline, and it was with difficulty that this material could be " milked " from the ureters into the bladder The epithelial lining of pelves and ureters showed many blotchy hæmorrhages and there was hæmorrhagic staining of the surrounding connective tissues The bladder contained a few c cm of

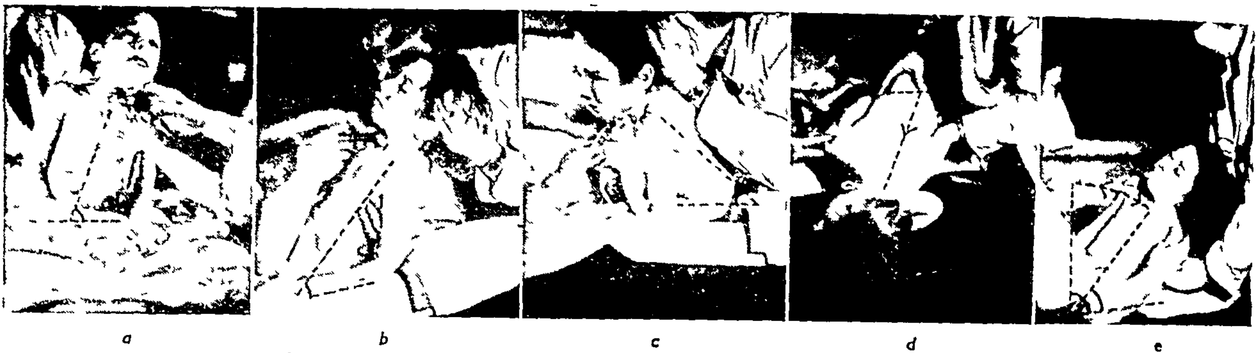

Fig 2—(a) Child kept well tilted to the left during whole procedure until X-ray photographs have been taken (To fill left side only)

(b) Iodised oil, 2 c cm is slowly injected with child leaning backward at 45°, pause of 1 min after injection (To fill dorsal and lower lobe branches)

(c) Iodised oil, 2 c cm , is slowly injected with child leaning forward at 45°, pause of 45 sec after injection (To fill anterior branches and middle lobe)

(d) Iodised oil, 1 c cm , is rapidly injected with child in the sitting position child is then immediately inverted over left side of the operating table fo 30 sec (To fill the upper lobe)

(e) A further 2 c cm of iodised oil is injected with child in sitting position child is then slowly tilted backward through 45° and forward to the sitting position several times (To ensure complete filling of lower lobe, usually the most difficult to fill)

Fig 2 shows the positions required during the introduction of iodised oil, to ensure complete filling of all parts of the left lung

It is important, after getting the child to adopt each new position, to withdraw air into the syringe before injecting the oil, so as to be certain that the needle is still in the trachea , otherwise oil may be injected into the surrounding tissues The quantities given (fig 2) are suitable for a child of 7 , for a younger child slightly less oil would be used and for an older child a little more, the dose in either case being kept preferably between 5–10 c cm The child is then laid down on the side that has been filled and X-ray photographs are taken If by this time he has not coughed, he is instructed to give a gentle cough , this helps to give an even spread of the oil Lateral and anteroposterior X-ray plates are exposed, and then a second lateral, to ensure that a good lateral picture is obtained Even if the child coughs the pictures are often good If the radiograms show incomplete filling in any area, more iodised oil can be introduced with the child in the appropriate position

The method requires a certain amount of cooperation from the child , it is practical for those of five years and over, and even for children under five who happen to be good patients

For uncooperative children the less satisfactory method with open ether anæsthesia must be tried The same technique can be used except that butethanol is not necessary and atropine, gr 1/100, must be given half an hour beforehand All procedures are carried out outside the X-ray room, the child being brought in for radiography only, ether and mask being left behind to eliminate the risk of an explosion Anæsthesia is continued until the radiograms have been seen, when if parts are unfilled more iodised oil can be injected It is important that the child should at no time be allowed to cough, because the oil enters the alveoli of the lung irregularly when the patient is under a general anæsthetic The anæsthetic should be given by some one accustomed to the technique Oxygen can be used with advantage to combat cyanosis but nitrous oxide should never be used when introducing iodised oil because it tends to make the oil enter the alveoli

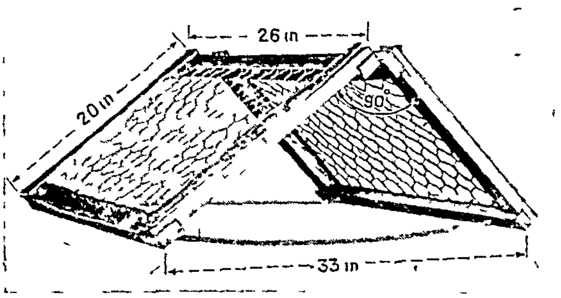

Fig 3—War time tipping board made from common materials

EQUIPMENT

Iodised oil —'Lipiodol' (Bengué) 40% is recommended but other products such as 'Neo Hydriol' (M&B) may be used, unfortunately they have an odour which the child dislikes There is no necessity to heat the iodised oil providing it has been at room temperature for a short time

The needle (fig 1) is a modification of Delille's trocar and cannula It consists of a stilette attached to a handle which fits into a curve needle, the bevel of which is arranged like a lumbar puncture needle so that it separates the fibres of the cricothyroid membrane and does not cut across them At the hilt of the needle there is a metal plate with two perforations so that by means of tape it can be held in position like a tracheotomy tube Two small handles on the upper and lower surfaces of the plate enable the surgeon to take a good grip of the needle The stilette is prevented from rotating in the needle by a notch on the upper surface An ordinary 10 c cm Record syringe is quite satisfactory for use with this needle, but it must fit well into the needle because withdrawal of air is used as the indication that the needle is in the trachea, should there be a leak a false impression is gained and oil may be injected into the surrounding tissues The needle should be sharp and the forefinger should be placed on the top of it when introducing it into the trachea because the instrument is delicate and might break at the hilt

The tipping board (fig 3) shows a war time board using the minimum of wood , it can be folded and carried about easily, even by the child himself Two square frames of wood are hinged together on one side and the opposite sides are connected by two pieces of rope The angle at the top is 90°, and the length of the base 33 in , the boards are each 26 in by 20 in Strips of canvas or wire netting fill the intervening spaces

COMPLICATIONS AND DIFFICULTIES

Surgical emphysema is rare if the puncture hole is rubbed vigorously immediately after withdrawal of the needle, to encourage closure of the needle track , it occurred once only in 100 cases Sepsis around the puncture hole is seldom seen if aseptic technique is practised , it also occurred once in the 100 cases It is important to make sure that bronchiectatic areas are almost empty of secretion before bronchograms are taken, otherwise filling with oil is inadequate, or septic secretion trickles into neighbouring portions of lung and causes pneumonia In this series pneumonia developed in one advanced case of bronchiectasis where the cavities could not be sufficiently emptied The danger of injecting iodised oil into the surrounding tissues rather than the trachea is exaggerated , it should never happen if the syringe fits closely into the needle, and if air is withdrawn into the syringe from the trachea after each new position has been taken up and before the oil is injected Occasionally the needle catches on the back of the trachea , to correct this, the syringe and the base of the needle must be raised, so that the point of the needle is brought forward Sometimes there is difficulty in distinguishing the

BP 165/95 mm Hg On passing a catheter 1 oz of almost pure blood was obtained Morphine gr ¼ and atropine, gr 1/75 were administered and the dose repeated after an hour owing to persistent pain and restlessness Intravenous infusion with 2½% sodium citrate was commenced immediately, temporary suspension was necessary after 2 hours because of a moderately severe rigor He was encouraged to take as much fluid by mouth as possible but even small amounts of sweetened cordial were returned Twenty four hours after the original onset of urinary symptoms, the pain in the loins had diminished and the left loin was only moderately tender The blood-urea was 36 mg per 100 c cm and the blood pressure had fallen to 120/80 mm Hg At the end of 36 hours—30 hours after the beginning of treatment—he had still passed no urine in spite of intravenous infusion with 12½% glucose, hot poultices to the loins, and repeated warm colonic irrigations The total fluid intake by this time was 5 pints, of which only ½ pint had been taken by mouth, 22 g of sodium citrate had been administered intravenously The pulse was satisfactory and he no longer complained of pain, though there was still aching in the loins The complexion had assumed a muddy tint, some moist crepitations were now audible at the bases of both lungs, and his general condition was considered to be deteriorating Operation was decided on

At 10 P M on July 17 cystoscopy was performed The bladder contained ½ oz of very dark amber coloured urine The trigone was much congested with areas of submucous hæmorrhage and small scattered deposits of crystalline yellowish brown and silvery debris Both ureteric orifices were very œdematous, the right being extremely difficult to locate owing to locally adherent debris and clot No flow was visible from either orifice A No 6 Nyland catheter was inserted into the left ureter with some difficulty owing to local distortion, and passed reluctantly, with a grating sensation for the first 5 cm After the initial resistance had been overcome, the catheter passed easily and without hindrance to the renal pelvis and dark amber coloured urine escaped at a rapid drip The right ureteric orifice was completely blocked by a small, hard, protruding concretion which was dislodged with difficulty The catheter met no further obstruction in the right ureter, from which urine of similar characteristics to that of the left escaped The urine from both catheters which were left in place, was acid

Further analysis of the urine from the bladder revealed many red cells and sulphapyridine crystals The crystals have a characteristic appearance, being slender and sharp pointed and clustered together in bundles like sheaves of wheat No crystals were found in the ureteric specimens, both of which contained many red cells and debris The sulphapyridine content of each was left 192 mg, right, 217 5 mg per 100 c cm

The patient's general condition rapidly improved after the operation and the output from each ureter for the next 12 hours was 23 oz of heavily blood stained urine Vomiting had ceased, so that fluids were given by mouth, the intake for the first 24 hours being 8½ pints, and output 7 pints Temporary blockage of one or other catheter was relieved by irrigation with sterile saline and both were finally removed after 60 hours Macroscopic hæmaturia ceased after 48 hours and microscopic after 96 hours Intake and output thereafter remained entirely satisfactory

Further cystoscopy six days later (July 23) showed great improvement in the appearance of the trigone, though both orifices were still surrounded by œdema and submucous hæmorrhage Catheterisation was easy and revealed no obstruction Dye excretion from both kidneys was normal Examination of the urine on Aug 1 showed sp gr 1014, acid reaction, a faint haze of albumin and microscopically a few pus cells, the blood urea and renal function tests were normal

DISCUSSION

This case presents many of the features noted in those previously published, but he came under our care too late in the illness to allow us to observe events immediately preceding anuria Seligman (1941) has reported a case of anuria following only 8 g of sulphathiazole during which vomiting was excessive He pointed out that excessive vomiting may play an important part in causing concentration of the drug in the urine with subsequent ureteric obstruction from acetyl sulphathiazole crystals It is noteworthy that vomiting was not a complication of sulphapyridine therapy in our case Thompson and others (1941), in a report of a case of anuria following sulphadiazine therapy, doubted the significance of an alkaline urine in preventing crystalluria, for the reaction of the urine in his particular case proved to be alkaline in every specimen save one Thus, the use of alkali, even when given early, is not proof against acetylisation In any event, the administration of alkali in an established case of urinary suppression could hardly be expected to affect the reaction of the urine, since the kidneys are not secreting—a point borne out by observations in the present case

With regard to the prodromal signs of anuria, particular attention should be paid to the urinary output since in Thompson's case the output began to fall slowly on the third day and after 11 g of sulphadiazine, there was no gross hæmaturia However complete anuria did not develop until the eighth day, by which time 38 g had been given Nausea and vomiting were absent throughout The importance of the urinary output has also been stressed by other observers (Carrell, Shea and Pike 1940, Laird 1941, Schulte, Shidler, and Niebaner 1942) From the published work it appears that oliguria and anuria may follow the administration of even small total quantities of this group of drugs, again emphasising the importance of close observation on the urinary output throughout chemotherapy Laird emphasises also the importance of maintaining a daily fluid intake of at least 3000 c cm prophylactically as well of making frequent examinations for microscopic hæmaturia

Concerning the pathology of sulphonamide anuria, there is much evidence that mechanical obstruction takes place in the pelvis and ureter rather than in the renal parenchyma Apart from the support given to this contention by successful ureteric catheterisation in these cases, further evidence is found in the post-mortem records of a case described by Schulte and others (1942) in which death occurred 11 days after pneumonectomy, 54 g of sulphadiazine had been given and at autopsy yellowish-orange granular deposits were found in the right renal pelvis and throughout the course of the right ureter, careful histological examination of both kidneys failed to demonstrate any crystals in the renal tubules Another fatal case has been recorded by Backhouse (1939) in which post-mortem examination revealed sulphapyridine calculi causing obstruction at the lower ends of the ureters, both of which contained urine under pressure The rationale of ureteric catheterisation thus appears to be established, and is borne out by its successful employment in the reported cases Tsao as early as 1939 described a fatal case of anuria after sulphapyridine therapy, and attributes the death of the child to concretions completely blocking each ureter, he said that the assistance of a urologist might have saved life Laird (1941) also considered ureteric catheterisation a life-saving operation in his case and suggested that an arbitrary period of 12 hours anuria was sufficient indication to perform this operation in every case Rogan and Cruickshank (1942) have described a case of sulphapyridine anuria treated by 'Inductotherm' applied to the loins and advise that this method should be tried before resorting to ureteric catheterisation They agreed, however, that if the condition was due to uretero-vesical obstruction catheterisation would be required Inductotherm treatment would admittedly be valuable if obstruction could be shown to occur in the kidneys, but the site of the obstruction can only be determined by cystoscopy and catheterisation, and the use of short-wave apparatus in war-time, unless it is efficiently screened, is prohibited

In the prevention of oliguria, a large fluid intake throughout chemotherapy is of prime importance

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thick, slightly bloodstained fluid and the mucosa showed several small hæmorrhages.

Microscopical examination of kidneys.—The lining of Bowman's capsule was swollen, with varying amounts of desquamation. The tufts were not swollen but showed evidence of shrinkage and disintegration. The capsular spaces contained partly amorphous eosinophilic material and partly cellular debris. There was moderate swelling and cytoplasmic granularity of the tubular epithelium, especially of the first convoluted tubules and in most of the tubules there was cellular and amorphous debris. A few of the collecting tubules contained blood and near the pelvis the intertubular vessels were greatly dilated. There was an extensive hæmorrhagic infiltration into the tissues of the pelvis. Frozen sections, examined with crossed Nicol prisms, failed to show any crystalline material in the kidney substance. There was no fatty change in the tubular epithelium. The material from the ureters consisted of blood and masses of crystals, mostly sheaves of elongated needle forms, sometimes shorter rectangular rods found either singly or in groups. The fluid from the bladder contained 47 mg. per 100 c.cm. of total sulphapyridine, only a trace being demonstrable in the free form, and 93 mg. per 100 c.cm. of urea. It contained very large numbers of epithelial cells, blood cells and other organised material. The white material from the ureters contained 78% acetylated sulphapyridine, no free sulphapyridine being detected.

DISCUSSION

The sequence appears to have been the precipitation of acetylsulphapyridine within the kidney, followed by a massive deposition in the pelvis and ureter leading to hæmorrhagic pyelitis and ureteritis, but there was also evidence of glomerular and tubular damage. It is difficult to say whether the latter changes were due to the direct action of the sulphapyridine or were wholly or in part a secondary effect of the obstruction; but we have observed similar glomerular and tubular changes in the kidneys of rats fed on large doses of sulphapyridine over a period of four weeks and not showing ureteral obstruction. Peterson and Finland give instances of similar lesions and it is significant that Antopol (1940) describes similar changes in the kidneys of a man who died after showing only microscopic evidence of hæmaturia. Whitehead (1941) found crystals in many sections of the kidneys but no sulphapyridine concretions in the ureters. He suggested that the ureters were blocked at their lower ends by subepithelial hæmorrhages.

The solubility of acetylsulphapyridine is about half that of sulphapyridine—34·1 mg. as compared with 61·3 mg. per 100 c.cm. at pH 6·5 (Macartney et al. 1942)—and it seems probable that in patients who develop renal complications there is an idiosyncrasy causing an abnormally high percentage of the drug to be excreted in the acetylated form. It is not possible to prove this point in this particular case since estimations of the free and acetylated sulphapyridine in blood and urine before the onset of anuria were not made. As in the other reported cases the total amount of sulphapyridine given does not appear to have been the determining factor. This patient received 22 g. over four days; Rogan and Cruikshank's case had 15 g. in two days; Leedham-Green's 12 g. in three days; and Whitehead's 17 g. in forty hours.

Several writers (Leedham-Green 1941, Backhouse 1939) emphasise that treatment with large amounts of fluid and with alkali may be effective. In our case it is noteworthy that the patient had been having an alkaline mixture on account of gastric symptoms for twenty-four hours before receiving sulphapyridine, and he continued to take alkalis throughout the illness. In any event it seems very doubtful whether the urine can ever be made sufficiently alkaline to increase the solubility of acetylsulphapyridine materially. This patient was reported to have taken fluids freely at home, and during two days in hospital he took at least 4½ pints by mouth and 3000 c.cm. by intravenous drip. Ureteric lavage was not attempted and it is impossible to state what the result of this would have been if carried out at an early stage. Judging from the condition at autopsy, where pelvis and ureter were found to be packed with clot and crystals throughout their course, it is difficult to imagine that the procedure could have been successful in the later stages of the illness.

SUMMARY

The clinical and post-mortem findings are recorded in a case of sulphapyridine blockage of the ureters after a total dosage of 22 g. The lesion was essentially a hæmorrhagic pyelitis and ureteritis, following massive deposition of acetylsulphapyridine.

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SULPHAPYRIDINE ANURIA
TREATED BY CYSTOSCOPY AND URETERIC CATHETERISATION

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ANURIA during the administration of one of the sulphonamide drugs is an uncommon but serious complication. Finland and his associates (1941), in reporting a series of 446 cases of sulphadiazine therapy, noted that gross hæmaturia and anuria occurred in 1 case only. A number of cases have been reported chiefly from America, in which ureteric catheterisation was successfully employed. Laird (1941) however, in a paper concerning 794 cases of gonorrhœa treated with sulphapyridine, reported gross hæmaturia in only 5 cases and anuria in 1, the latter responding to catheterisation of one ureter. While but few fatal cases have been recorded, it is considered that, in view of the wide use of sulphonamides, further attention should be drawn to this serious complication and its prevention, and to a safe and successful method of treatment. In the following case, anuria complicating the sulphapyridine treatment of pneumonia was successfully treated by ureteric catheterisation.

CASE-RECORD

A well-built chief petty officer, aged 38, began his illness at sea nine days before admission with general malaise, cough and pain in the right chest. Three days later, when he reported sick, bronchopneumonia was diagnosed and sulphapyridine therapy begun, a total of 21 g. being given during the next three days. It was discontinued on the fourth day of treatment, by which time he was apyrexial and the chest condition progressing satisfactorily. No vomiting had taken place. Thirty six hours after the cessation of sulphapyridine, he suddenly experienced burning pain in the penis and passed a small quantity of blood stained urine. There was no history of any earlier dysuria or hæmaturia, but no record of fluid intake or output had been kept for the preceding twenty four hours. However, a few hours previously, he was stated to have passed a usual amount of apparently normal urine. On admission to this hospital six hours later, on July 16, 1942, he complained of a constant, severe, aching pain in both loins and had persistent urgency but could void no urine. The only other complaints were of nausea and flatulence, and he had vomited shortly before admission.

His previous history included an illness presenting the features of acute nephritis at the age of 15 years. Since then there had been no symptoms suggestive of permanent renal damage.

He was suffering fairly severe pain. His temperature was 97·6° F., pulse rate 68 and respiration 28 per min. His complexion was sallow, and tongue slightly furred. Movement of the right hemithorax was moderately impaired, with slight dullness on percussion in the right lower axilla. Many fine and medium crepitations were also heard in this area, and the signs were considered to be those of an area of consolidation undergoing resolution. The abdomen was soft but there was extreme tenderness in both loins, particularly the right. There was no tenderness on firm palpation over the bladder.

(1) Careful supervision of the population at risk, including occasional week end visitors of the evacuee families Communications were sent to the medical officers of health of the areas in London where the persons resided and they were followed up there with negative results

(2) Fullest use of laboratory facilities and close collaboration with the laboratory workers

(3) Immediate removal to hospital of all ascertained cases, including many that would not have been diagnosed at all without strict and repeated bacteriological control

(4) Preliminary instructions on July 10 to boil all water and milk, followed on July 14 by cutting off the water supply By July 18 main water supply was laid on to the houses of the court, taps being installed in the yard

(5) Relaying of all defective drainage in the properties concerned

SOURCE OF THE OUTBREAK

The only factor common to the inhabitants of the court and not shared by the rest of Brixworth was the water-supply, which for this reason alone was strongly suspected from the start Bread and milk could be dismissed as possible sources of the outbreak , blood and two samples of fæces and urine from all the staff of the bakery and dairy supplying the court were investigated, with negative results Suspicion of the water was strengthened by the very high proportion of cases among the population at risk (21 out of 34) and by the fact that no cases occurred in the rest of the population of Brixworth, a village of some 2000 inhabitants The isolation of *Bact paratyphosum B* from the water collected on July 12 completed the chain of evidence

The method by which the water became polluted can only be guessed at Several recent cases of paratyphoid B fever in the neighbourhood had to be considered Earlier in the year there had been a small outbreak in a residential school 6 miles to the east Three weeks before the outbreak in the court a sporadic case occurred in a village 2 miles to the west and almost at the same time a case was notified in a village 6 miles to the north. No connexion between any of these cases and the outbreak in the court could be traced Careful inquiries showed that five of the patients in the court had had attacks of diarrhœa in April These may have been the result of some non-specific pollution of the well but it is possible that they were mild cases of paratyphoid fever and that one or more of them had continued in the carrier state up to July Laboratory examinations in July showed that all of these five were excreting *Bact paratyphosum B* and gave significant serum reactions to *Bact paratyphosum B* H and O and also to salmonella group suspension, but these findings could not be expected to give any indication as to when the infection was contracted Search was made for a possible carrier among the other residents or visitors of the court The only persons against whom there was any suspicious evidence were Mr A B and Mrs C D Mr A B gave a history of having had a bad attack of diarrhœa 3–4 weeks previously This man was not ill at any time during the actual outbreak four specimens of fæces were examined and only one, collected on July 19, was positive His serum showed agglutinins with *Bact paratyphosum B* H suspension to a titre of 1/125 but a second examination of his blood was not made Repeated specimens of urine gave a negative result He had been in the last war, but could give no history of past inoculations Mrs C D was also found to be excreting *Bact. paratyphosum B* in the fæces on only one occasion No decisive evidence against either of these could be found It is clear that the sanitation of the court was crude and that, given a single case or carrier, infection of the water-supply was almost inevitable Whether all the remaining 19 cases were infected directly from the water or from personal contact cannot of course be determined The first cases were reported on July 10, the last case on July 31, so that some may have been secondary

Bacteriology—There is no doubt that the organism isolated from the water was *Bact paratyphosum B* This organism was isolated from samples of the well water collected on July 12, 15 18 and 21, and Aug 6 It is quite plausible that the water first became infected about three weeks previously, and thereafter remained so until all carriers or cases had been removed from the court

The infection in the water was certainly heavy Northampton isolated *Bact paratyphosum B* on three occasions Oxford reported the isolation of *Bact paratyphosum B* from nine out of twelve 5 ml quantities from the sample collected on July 18 —a sample which travelled for three days before reaching the laboratory Leicester isolated *Bact paratyphosum B* from as little as 0 1 ml of a sample of water collected on July 21 All three laboratories agreed that the organism isolated from the water was predominantly in the group phase, but type phase colonies were found in some samples after careful search, and Oxford reported "As the organism was in the group phase suitable subcultures had to be made to obtain the type phase When this was obtained it was found to have agglutinated to full titre with serum prepared against *Bact paratyphosum B* H and O" Northampton and Leicester used tetrathionate broth as the culture medium followed by plating out on to eosin brilliant green methylene-blue agar (Knox, Gell and Pollock in the press) Oxford used Kauffmann's brilliant-green bile tetrathionate broth At Leicester *Bact paratyphosum B* was isolated in nearly pure culture by the use of tetrathionate broth with a formula known to be considerably more inhibitory than Muller's or Schäfer's medium [1] It is interesting to note that the organisms from the fæces of persons who drank the water were also predominantly in the group phase, though in a few specimens the type phase predominated and in repeated specimens from the same patient the group phase might replace the type phase or vice versa The sera examined also showed some very high titres with salmonella group suspensions In one of the early cases the agglutinins were *Bact typhosum* O 1/50, H negative at 1/25, *Bact paratyphosum* B O 1/500, H 1/250 trace, salmonella group 1/25,000 The relative titres with *Bact paratyphosum B* H and salmonella group suspensions did not appear to be closely related to the predominance of type or group phase in the fæces of the same individuals

Fully authenticated outbreaks of water-borne paratyphoid B fever are rare In several outbreaks water has been strongly suspected,[2] but bacteriological confirmation has been lacking There is a report [3] of a small domestic outbreak in Schleswig-Holstein in which *Bact paratyphosum B* was found in water from a well supplying the household involved In the Brixworth outbreak the evidence of a water-borne infection is complete though the original source from which the water became infected could not be discovered

SUMMARY

An outbreak of paratyphoid fever at Brixworth is described, in which 21 out of 34 residents in a group of seven cottages built round a court containing a pump from a shallow well proved to be infected From its mode of onset and distribution the outbreak was thought to be water-borne This was confirmed by the isolation of *Bact paratyphosum B* from five different samples of the well water in three different laboratories The way in which the well became infected was not discovered, but there was ample opportunity for infection to have occurred by pollution of the ground in the vicinity.

We are indebted to Dr C B Hogg, superintendent of Kettering Infectious Diseases Hospital, for supplying us with information about the patients under his care

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[1] Formula of medium used To 42 c cm of broth sterilised with 2 5 g chalk were added 3 c cm of phenol red solution, 20 c cm of 24 8% (molar) sodium thiosulphate solution 5 c cm of 12 7% (normal) iodine, and finally 30 c cm of the sample of water

[2] Annual Report of the Ministry of Health 1926 p 48 1933 p 47 1935 p 38 Annual Report of the MOH for Lowestoft 1935, p 62

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INSTRUCTIONS FOR MEASURING INSULIN —Dr S L Simpson has made a valiant attempt to minimise mistakes in the injection of insulin by means of diagrams of syringes on which the doctor marks on the barrel how far the piston should be withdrawn for so many units of insulin These have proved useful at Willesden General Hospital diabetic clinic and the diagrams are now published as a stiff four-page folder (H K Lewis 6*d*) Of course no card can replace personal demonstration, but it may serve well as an aide-memoire to the instructed patient The simplification has perhaps been carried too far as only one strength of insulin, 40 units per c cm , is mentioned

A WATER-BORNE OUTBREAK OF PARATYPHOID B FEVER

D J Jones
MB WALES DPH
MEDICAL OFFICER OF HEALTH FOR BRIXWORTH

P G H. Gell
MB CAMB
EMERGENCY PATHOLOGIST, PUBLIC HEALTH LABORATORY, NORTHAMPTON

R Knox, MD LOND MRCP
EMERGENCY PATHOLOGIST PUBLIC HEALTH LABORATORY, LEICESTER

In July 1941 there occurred in the village of Brixworth Northants, an outbreak of paratyphoid B fever which though small, was of interest because epidemiological inquiries led decisively to the conclusion that the source was an infected water-supply, and this conclusion was confirmed by the discovery on several occasions of *Bacterium paratyphosum B* in the water[1]

On July 10, four cases of enteric fever were diagnosed on clinical grounds in Brixworth The symptoms were frontal headache and diarrhœa of several days duration and the signs fever, sweating furred tongue and in three cases rose spots All were removed next morning to the isolation hospital The sera of all four patients showed agglutinins in high titre for *Bacterium paratyphosum B*, which was isolated from fæces and urine

All four patients were living in a group of seven cottages in Brixworth, but four different households were involved The water-supply was pumped from a well and shared by the inhabitants of the cottages Immediate instructions were given to all the residents to boil all water and milk until further notice. Bacteriological examination showed the milk to be satisfactory but a sample of the water collected on July 12 was heavily polluted and gave a fæcal coliform count of 1800 per 100 ml The pump handle was therefore chained on July 14 Next day a report was received from Northampton EPH Laboratory that from the sample of water collected on July 12 *Bact paratyphosum B* had been isolated In the meantime, blood samples had been taken from all adults living in the seven cottages ; four of these agglutinated *Bact paratyphosum B* H or salmonella group suspension to titres ranging from 1/50 to 1/250 All four were removed to hospital and were found to be excreting *Bact paratyphosum B* Two of them admitted to having had diarrhœa as the sole symptom within the previous 5–7 days Later it was found that one of these four, Mr A B, had had about 3 weeks previously an attack of diarrhœa which came on suddenly and lasted two or three days. On July 15 blood samples were taken from all of thirteen children living in the cottages Nine showed agglutinins to a significant titre with *Bact paratyphosum B* H or salmonella group suspensions Most of these children had had no symptoms, all nine were however removed to hospital, and were subsequently found to be infected by isolation of *Bact paratyphosum B* from their excreta Careful watch was kept on the remaining occupants of the cottages, and at intervals specimens of blood, fæces and urine were examined bacteriologically. In the next few days two married women and a girl, whose blood had previously shown agglutination to 1/50 with salmonella group suspension, were found either to be excreting *Bact paratyphosum B* in the fæces or to show significant agglutination with *Bact. paratyphosum B* H or salmonella group suspensions The son of one of these women was found to have paratyphoid B in a specimen of fæces taken on July 31 No further cases were discovered

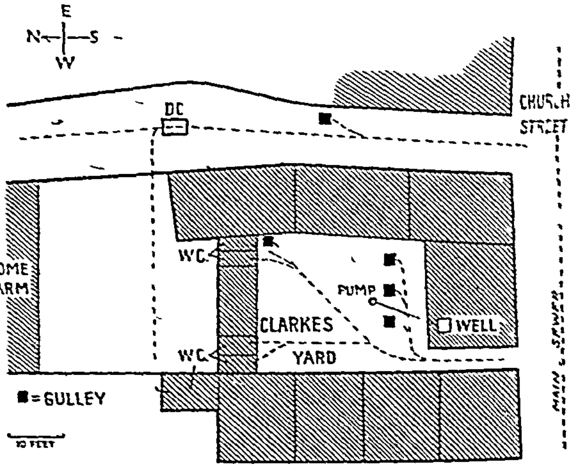
The population at risk in the cottages was 34, of this no fewer than 21 (in fact, all of those suspicious on clinical or serological grounds) were found at one time or another to be excreting *Bact paratyphosum B* in the fæces Only four of these can be described as typical clinical cases

SANITATION AND DRAINAGE

The area concerned in the outbreak was a group of seven houses Two of these had been the subject of action by the local RDC under the Housing Acts, and the owner had given an undertaking not to permit the houses to be used for human habitation The houses were however reopened for the reception of bombed-out families from London

The seven houses were grouped around a closed yard, the entrance to which was through a narrow alley way (see figure) The site was a good example of the old type of court The water-supply to these seven houses was from a pump at least 50 years old The water actually collected in a small brick chamber in the basement of one of the houses and was piped thence to the pump in the centre of the yard The well was approximately a 2 ft 6 in cube with a 2 ft depth of water in it, it lay 4–5 ft below ground level and had been subject to flooding from surface water in the yard during heavy rainstorms The distance from the well to the pump was 15 ft The well held 30–35 gallons of water It was very rapidly emptied taking half an hour to refill

The houses round the court were served by four hand-flushed closets The sewage from these discharged into pipes which ran within a few feet of the pipe connecting the well and the pump, and then passed out of the court in the line of the alley-way to enter a sewer under the roadway south of the court. The closets and drainage had been in existence at least 50 years according to one of the oldest residents There were in addition four gulleys which entered the drains at various points in the yard



Plan of the area in which the cases occurred.

As soon as *Bact paratyphosum B* was found in the water, the drainage of the area adjacent to the court was investigated From the diagram it can be seen that there were three possible sources from which the well might have been infected—the drainage of the farm on a slightly higher level to the north of the court, the drainage of the court itself, and the main sewer under the roadway Fluorescein tests suggested that all three systems might be defective, direct inspection showed defects in the first two sets of drains but the main sewer was not inspected That the source of infection was very close to the well is suggested by the fact that despite careful inquiry not a single case of infection was detected in the village apart from the inhabitants of the court The farm above the court can almost certainly be excluded, for repeated examination of blood, fæces and urine from its eight inhabitants yielded negative results In the village itself across the road from the court at a distance of 50–100 yards there were three wells which, after the fluorescein test, showed the colour of the dye This may have been due to a leak in the main sewer or possibly to an abnormally heavy fall of rain which occurred immediately after the test None of the consumers of water from these wells had any ill effects and all the families concerned were investigated with negative results It seems therefore most likely that the water in the well became infected from some point in the drainage system of the court itself

Action taken by the local authority—The main features of the action taken by the local authority in controlling the outbreak were as follows

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[1] Epidemiological inquiries were made by one of us (D J J) with the help of the Brixworth sanitary inspectors and later of Dr Fleming of the American Red Cross and in consultation with the regional medical officer of the Ministry of Health and Dr Smith, county medical officer The laboratory work was carried out at the Emergency Public Health Laboratories at Northampton and Leicester in addition, one sample of water was examined at the EPH Laboratory at Oxford

(1) Careful supervision of the population at risk, including occasional week end visitors of the evacuee families Communications were sent to the medical officers of health of the areas in London where the persons resided and they were followed up there with negative results

(2) Fullest use of laboratory facilities and close collaboration with the laboratory workers

(3) Immediate removal to hospital of all ascertained cases, including many that would not have been diagnosed at all without strict and repeated bacteriological control

(4) Preliminary instructions on July 10 to boil all water and milk, followed on July 14 by cutting off the water supply By July 18 main water-supply was laid on to the houses of the court, taps being installed in the yard

(5) Relaying of all defective drainage in the properties concerned

SOURCE OF THE OUTBREAK

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An outbreak of paratyphoid fever at Brixworth is described, in which 21 out of 34 residents in a group of seven cottages built round a court containing a pump from a shallow well proved to be infected From its mode of onset and distribution the outbreak was thought to be water-borne This was confirmed by the isolation of *Bact paratyphosum B* from five different samples of the well water in three different laboratories The way in which the well became infected was not discovered, but there was ample opportunity for infection to have occurred by pollution of the ground in the vicinity.

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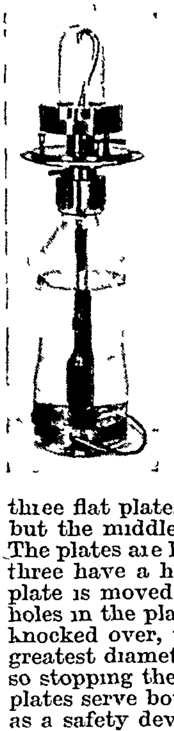
PORTABLE APPARATUS FOR CONTINUOUS INTRAVENOUS THERAPY

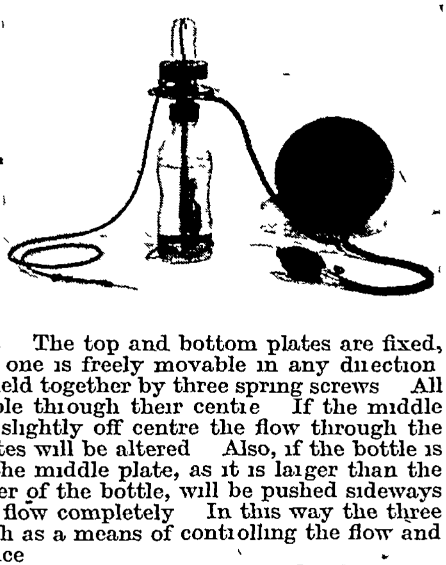
B G B Lucas, M R C S, D A   A L Sims
ACTING SQUADRON LEADER R A F V R

The apparatus described in this paper was designed primarily for the continuous administration of intravenous anæsthetic solutions, but it can also be used for the intravenous injection of blood or other fluids Of the many forms of apparatus in use, none appear completely satisfactory An inverted reservoir on a stand is clumsy and easily knocked over, whereas if positive pressure is used the apparatus tends to leak Again, the rubber parts of most machines perish rapidly with continual sterilising, and constant replacements are necessary

It was finally decided that an intravenous apparatus must be portable and not occupy any more space than is absolutely necessary (this ruled out a gravity feed in favour of some form of positive pressure apparatus), it must be completely safe so that under no circumstances can air be injected into the patient, even if the bottle is knocked over accidentally or becomes empty, it must fit a standard bottle (the EMS blood-transfusion bottle was chosen as the standard), it must be reliable, robust and hard-wearing, have an adjustable and clearly visible drip feed, and be easy to sterilise In order to meet the need for hard wear we decided to reduce glass and rubber to a minimum, and to build the apparatus of metal Brass was chosen for its easy machinability and cheapness of manufacture All metal parts were afterwards silver-plated

The apparatus[1] (see figures) consists of a screw cap through which passes a long tube reaching to the bottom of the bottle At the lower end of this tube is incorporated a float valve which, by its own weight, will cut off the supply of liquid when the bottle is nearly empty The float being hollow normally rests against the upper screw, but when the bottle is empty it falls, sealing the rubber opening The flow is controlled by a system of three flat plates The top and bottom plates are fixed, but the middle one is freely movable in any direction The plates are held together by three spring screws All three have a hole through their centre If the middle plate is moved slightly off centre the flow through the holes in the plates will be altered Also, if the bottle is knocked over, the middle plate, as it is larger than the greatest diameter of the bottle, will be pushed sideways so stopping the flow completely In this way the three plates serve both as a means of controlling the flow and as a safety device





The glass drip bulb is a ‘ Pyrex ’ test-tube chosen for its strength and ease of replacement This is held in place by a rubber gland, compressed by a surrounding hand nut In course of time the rubber perishes and tends to leak, the gland can then be further compressed, so keeping the junction air-tight Apart from the rubber washer inside the cap which fits on the bottle, the only other perishable part of the apparatus is the rubber seat of the float valve This, however, is merely a short piece of ordinary rubber tubing and can easily be replaced Positive pressure is supplied by a small hand bellows, a football bladder acting as an air reservoir The bladder was adopted because it permits enough reserve of pressure to last a whole bottleful The remainder of the apparatus, the outlet tubing and intravenous needle, are similar to those on the usual drip transfusion apparatus

The apparatus is sterilised by boiling for 20 min in the usual way It is then screwed on to an ordinary EMS transfusion bottle in which is placed the desired anæsthetic solution

This apparatus has been tested and used over a considerable period and in our opinion greatly simplifies intravenous anæsthesia It is completely reliable and foolproof and can be easily cleaned and sterilised When not in use it is left on the shelf and is boiled up only when required

PREPARATION OF ANTISCORPION SERUM

USE OF ATROPINE AND ERGOTOXINE

Ahmed Hassan Mohammed, PH D CAIRO
(Physiological Laboratory, Faculty of Agriculture, and Biochemical Laboratory, Faculty of Medicine, Fouad I University)

In an unpublished MSc thesis in 1937 I described the preparation of a crystalline toxin from a mixture of the poisons of the three most common Egyptian scorpions, but chiefly that of *Buthus quinquestriatus* This was a secondary proteose which caused both sympathetic and parasympathetic stimulation Its main effects were (*a*) inhibition of smooth muscle, (*b*) acceleration of the isolated heart (antagonised by ergotoxine), (*c*) rise of blood-pressure (reversed by ergotoxine), (*d*) hyperglycæmia and glycosuria, (*e*) vomiting and contraction of the intestine and bladder in the intact animal (antagonised by atropine)

The effects of poisoning by the toxin in rats can thus be combated by the use of either atropine or ergotoxine alone or more effectively by a combination of the two drugs

I have since made some further observations (unpublished PhD thesis in 1939) These show that the scorpion toxin has a specific absorption band (crude 260μ, pure 278μ) The different toxins and venoms obtained from four species—*B quinquestriatus*, *B leptochelys*, *B acutecarinatus* and *B hottentotta minax*—gave the same band This band is a direct indication of the potency of the toxin or venom solutions as affected by reagents or temperature Thus dilute alkali, acetaldehyde and formaldehyde inflect the band and diminish the toxicity Scorpion toxin produces the same rise of blood-pressure whether the animal injected with it is adrenalectomised, spinal or spinal adrenalectomised It also acts in exactly the same way as adrenaline on blood vessels, whether they are innervated or denervated, ergotinised or not—in other words, the toxin is a vasoconstrictor to either innervated or sympathectomised blood-vessels That is, it acts on the blood-vessels themselves as well as on their sympathetic nerve supply It can be concluded from these experiments that the toxin directly stimulates the nerve-endings of the autonomous system without selection

I have shown that in dogs, though neither atropine nor ergotoxine alone is effective, a mixture of the two drugs prevents the onset of symptoms, and that ergotamine tartrate (‘ Femergin ’ Sandoz) can effectively replace this mixture For a dog 1 m l d is 0 03 mg per kg, and for an animal weighing 6 kg 2 m l d is therefore 0 36 mg of toxin A mixture of atropine and ergotoxine protected a dog from this dose, which is large compared with the amount which can be delivered by a scorpion at a single strike A fully grown specimen of *B quinquestriatus* excited and made to strike seven times through a rubber membrane yielded only 0 5 mg of toxin Another scorpion of the same species made to strike three times gave only 0 2 mg and by electrical stimulation of a living specimen 0 6 mg of toxin was obtained Since in the majority of cases the victims are only struck once it should be possible to prevent the occurrence of symptoms either with a mixture of atropine and ergotoxine or better still with ergotamine tartrate

In the preparation of antiscorpion serum, formol toxoid (Shousha[1]) has been used for the early stages of active immunisation In the present paper it is shown that toxin may be used from the outset if the toxic effects are masked by the use of atropine and ergotoxine or ergotamine tartrate, or much better by using femergin and 'Bellafoline' (Sandoz) together

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[1] For further constructional details see *J sci Instrum* September, 1942

[1] Shousha, A T *Congr int Méd trop*

EXPERIMENTAL FINDINGS

In dogs —Fourteen dogs were immunised in the course of 5½ months by subcutaneous injections of toxin at 5-day intervals In seven the symptoms of the early doses were masked by the simultaneous injection with each dose of toxin of 0 033 mg atropine per kg and 0 005 mg ergotoxine per kg, and in the remainder by 0 04 mg per kg of ergotamine tartrate per kg By the time the animals had become actively immune to 5 m l d (0 165 mg toxin per kg) it was no longer necessary to use the pharmacological antagonists to protect them After some loss of weight in the early stages the animals returned to their early weight and remained in good condition throughout One dog after this course of immunisation was immune to 150 m l d and another to 55 m l d

In these dogs the antitoxic titre of the serum was tested by the method of Shousha,[1] various quantities of serum being added to 2 m l d of toxin, incubated for an hour and injected subcutaneously into albino rats weighing 100 g The m l d for rats of this weight is 0 02 mg of toxin Rats which received mixtures containing 0 4, 0 2, 0 1 0 066 and 0 05 c cm of serum from one of the immunised dogs survived, whereas those receiving 0 04 and 0 033 c cm of serum died, 1 c cm of serum would therefore neutralise at least 40 rat m l d s

In rabbits —Twelve rabbits were immunised by subcutaneous injection of toxin in the same manner In six 0 4 mg atropine per kg and 0 03 mg ergotoxine per kg, and in six 0 5 mg of ergotamine tartrate per kg was given subcutaneously with the toxin for the first twelve injections The injections were given at intervals of 5 days

Rats injected with mixtures of 2 m l d of toxin incubated with 0 2 to 0 033 c cm of serum from a rabbit immunised with toxin plus ergotamine tartrate survived, whereas those receiving mixtures containing 0 028 and 0 025 c cm of the same serum died The serum of this rabbit therefore neutralised 60 rat m l d s of toxin per c cm

In goats —Six goats were immunised by subcutaneous injection of toxin, and for the first twelve injections three were protected with atropine and ergotoxine and three with ergotamine tartrate They were then receiving 10 mg of toxin, and 4 months later without any further antidote treatment they were all immune to 175 mg of toxin The serum tested in the laboratories by Dr H Ibrahim of the ministry of health was found to be much stronger than that issued from the Lister Institute, 1 c cm neutralising up to 130 m l d for 100 g rats

With the object of employing a belladonna derivative of constant qualities bellafoline was employed instead of atropine Bellafoline combined with femergin gave better and quicker results Two goats were immunised by subcutaneous injection of toxin, and for the first four injections were protected with bellafoline and femergin They were then receiving 20 mg toxin, and 1½ *months* later without any further antidote treatment they were both immune to 200 mg of toxin The serum, tested in the laboratories of the Agouza Serum Department of the Ministry of Health, was found to be highly potent

CONCLUSIONS

If the sympathetic and parasympathetic nervous systems are first paralysed with atropine and ergotoxine or with ergotamine tartrate lethal doses of active scorpion toxin can then be injected without harm

Neither of these antidotes interferes with the antigenic power of the active toxin, and dogs, rabbits and goats injected with active toxin plus antidote acquired a high degree of immunity

This procedure might be used in the preparation of antiscorpion serum from horses

I wish to express my gratitude to Prof G V Anrep for his interest, to Prof Ali Hassan for his personal guidance, and to Dr M Talaat for help in the physiological experiments

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A CASE OF *P FALCIPARUM* MALARIA

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WAR and malaria are inseparable allies, and when there is a war in almost any part of the world where the isotherm is over 60° F malaria is likely to be an important medical and entomological problem During the last decade many important facts about the epidemiology of malaria have become known

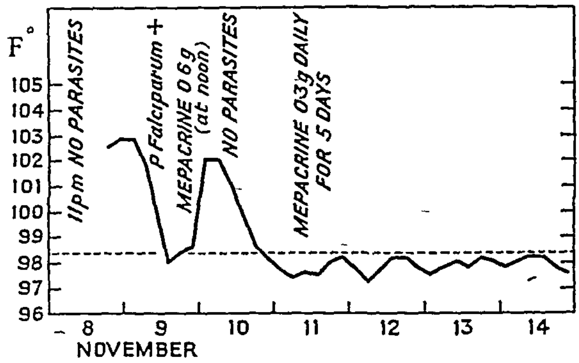
Plasmodium falciparum causes malignant tertian malaria, in which larger doses of quinine are usually necessary to cure an attack than with the other types of malarial infection Although the primary attacks are usually very severe, relapses are less common than they are with at least two other species, and a relapse seldom, if ever, occurs after the ninth month from the time the infected person leaves an endemic area *P falciparum* malaria is a tropical and subtropical disease and it is not endemic where the summer isotherm is much below 70° F, while *P vivax* (benign tertian) may be endemic with an isotherm of 60° F It seems that so far in this war malaria has not affected British troops to the same extent as during the last war, but our overseas forces are for the most part in the *P falciparum* belt and this parasite causes a higher mortality than either *P vivax*, *P ovale* or *P. malaria* It may therefore bring considerable anxiety to the medical authorities

In primary infections due to *P vivax*, over 85% of cases have quotidian fever with temperatures varying between 103° F and 106° F In untreated attacks the fever may continue for about a fortnight and then, even without antimalarial drugs, the tendency is towards a spontaneous recovery In relapses over 90% of the cases develop the classical tertian type of fever, and provided that the patient is confined to bed the fever usually disappears spontaneously after three or four attacks, probably depending on the number of attacks during the primary illness But parasites often persist for weeks after the cessation of fever and unless such cases are treated they will develop severe anæmia Even in acute primary cases of *P falciparum* the temperature often fails to rise above 102° F or 103° F On the other hand with *P vivax* infections a single attack seldom lasts for more than 10 hours and at the end of the attack the temperature falls rapidly to subnormal In *P falciparum* the temperature often remains above normal for several days, probably owing to successive segmentation of parasites at short intervals Recently a case has come under our care

CASE-HISTORY

An Army officer had been living in West Africa for 9 months He fell sick while in Africa and was admitted to hospital There was no previous history of malaria, but in August, 1941, he had been treated for bacillary dysentery, in September there was a gradual onset of pain in the right iliac fossa, aching in character and remittent The pain increased, and on his admission to hospital there was some tenderness in the right iliac fossa but no fever or vomiting He was constipated and there was a history of chronic indigestion His blood was examined for malarial parasites several times but always with a negative result He had begun taking quinine, gr 10 daily, on his arrival in Africa and continued until a few days after his return to England X rays showed nothing abnormal in the renal tract An opaque meal showed a filling defect about the size of a walnut in the medial cæcal wall just above the iliocæcal valve, fixed and with acute local tenderness The appendix was well filled, mobile and not tender The findings were consistent with retrocæcal abscess or malignant disease He was considered to be in need of urgent medical treatment so he was sent to England by air, and arrived on Oct 26, 1941

On admission to an English EMS hospital he looked rather sallow, his tongue was slightly furred, and his liver enlarged and tender, the spleen was not palpable He had tenderness along the ascending colon, the point of maximum tenderness being just about the cæcal area, there was hyperæsthesia to pin prick over this area On the day after admission a barium enema was given The barium passed through the colon freely to the ascending colon, this part of the colon was extremely irritable, filling and emptying periodically throughout the examinations the cæcum was not outlined The fæces showed no mucus or pus Cultures produced a profuse growth of *Streptococcus fæcalis* and staphylococci, Morgan's bacillus was isolated While at home on a week end pass he collapsed and had a rigor followed by profuse perspiration, pains in the limbs and severe pain in the right loin He was brought back to hospital His temperature on admission was 102° F, pulse rate 104 per min



Thick and thin blood-films were examined for an hour but no malaria parasites were found The question arose as to whether an antimalarial drug should be given in view of the clinical picture but it was decided to wait until the temperature fell and then examine further films Next day films were again examined and after a 50 min search of a thin film one parasite was found, 2 very small merozoites were suspected in a thick film The parasite found in the thin film was very minute (an accole form) The films were stained with Leishman as described by James[1]

The patient was given 0 6 g of mepacrine by mouth and 48 hours later a dose of 0 3 g daily for 5 days On Nov 20, 10 days after his attack of malaria, a barium meal was given and it was found that the cæcum filled normally There was no evidence of growth or other abnormality The enlargement of the liver disappeared and there was no tenderness over the cæcum or ascending colon At a subsequent medical board, the officer was graded A1

Up to date, ten months later, there have been no further attacks, either clinical or parasitological, and no further anti malarial drugs have been administered

COMMENT

A peripheral blood-film examination carried out at the height of an attack of *P falciparum* malaria failed to reveal parasites The illness is now believed to have been a straightforward uncomplicated case of *P falciparum* malaria We believe that it is unlikely that even a large dose of quinine, given orally, would have cured the attack as dramatically as did mepacrine (see figure)

It is not surprising that in Africa no malarial parasites were found, in view of the fact that, according to the patient, he was taking his daily dose of quinine all the time he was in hospital If on admission to the African hospital, quinine had been discontinued an attack of fever would probably have developed, as happened when he ceased taking quinine on his return to England, parasites would soon have appeared in the peripheral blood and a diagnosis of malaria would have been made As it was the daily dose of quinine was keeping the parasites at such a low level as to make it almost impossible to find them

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[1] James S P *Trans R Soc trop Med Hyg* 1929 23 269

Reviews of Books

Non-Pulmonary Tuberculosis

MICHAEL C WILKINSON, MB Lond, medical superintendent, Essex County Hospital, Black Notley London Hamish Hamilton Medical Books Pp 174 *12s 6d*

THIS book is based on Dr Wilkinson's experience in the investigation and treatment of 593 patients with all forms of non-pulmonary tuberculosis over a period of seven years His views coincide with those of others that the prognosis of non-pulmonary tuberculosis is largely dependent upon associated lesions and their multiplicity, that the disease runs a long course and one that is, to a certain extent, self-limiting, and that constitutional and conservative treatment must be applied first, operation being postponed until the disease is quiescent In his account of the pathogenesis the evidence in favour of a blood-stream infection is convincingly marshalled The salient points in constitutional treatment—open-air, rest for both patient and part, good food and sunlight—are accorded a separate chapter In considering the various forms of non-pulmonary tuberculosis individually he has used tables adroitly to show the incidence of associated lesions and the results of treatment

It is a commentary upon our time that the section dealing with the signs and symptoms of tuberculosis of the spine begins and ends with the radiological features thus the clinician's dependence upon the X-ray plate is as complete in the non-pulmonary as in the pulmonary manifestations of tuberculosis Nevertheless, the general reader would welcome a brief reference to the more purely clinical symptoms and signs in order that he may help to prevent those late admissions to sanatoriums which Dr Wilkinson mentions

The Autonomic Nervous System

(2nd ed) JAMES C WHITE, MD chief of neurosurgical services, Massachusetts General Hospital, REGINALD H SMITHWICK, MD, assistant visiting surgeon to the hospital London Henry Kimpton Pp 469 *35s*

DR WHITE has obtained the help of his colleague, Dr Smithwick in the task of rewriting his book, but those who knew and valued the first edition will be glad to find that the general pattern of the work is unaltered Every chapter shows signs of careful revision and amplification Surgical technique has been influenced both by the incomplete success of the earlier sympathectomies and by the results of physiological experiments, and the new operations, particularly for Raynaud's disease and for hyperpiesia together with the evidence given in support of their efficacy, have special interest The greater part of the book deals with the anatomy physiology, and clinical investigation of the autonomic system and its disorders and is of equal interest to physicians and surgeons The chapters on visceral pain, and particularly that on angina pectoris, are to be commended, though renal pain and its relief by sympathectomy is given rather less attention than the subject deserves There are more and better anatomical diagrams than in the first edition, but the illustrations of operations are still unworthy of a book pre-eminent in relating the autonomic nervous system to clinical medicine

Companion to Manuals of Practical Anatomy

(5th ed) E B JAMIESON, MD Edin London Humphrey Milford, Oxford University Press Pp 734 *15s*

THE fifth edition of this good and authoritative handbook can be used by students with manuals of practical anatomy, as intended originally or to replace in some ways the regular use of textbooks The section dealing with the central nervous system is still the most important part of the book, and the work is invaluable for occasional reference about detail, when it will spare the busy doctor a fatiguing search among larger works and textbooks

The Blood in Cancer

O CAMERON GRUNER, MD Lond Montreal, Renouf Publishing Co, London H K Lewis Pp 100 *15s*

IN this book, morphological changes and variations in the constituents of the blood in cancer are described in great detail, and illustrated by figures and colour plates It is not claimed that in cancer any specific or pathognomonic signs are to be found in the blood, but Dr Gruner believes that a pattern of changes forms a guide to diagnosis The alterations are recorded in pictorial form on charts from which the idea of a pattern is derived

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BIOCHEMICAL SOCIETY —A meeting of this society will be held in the Department of Biochemistry, South Parks Road, Oxford, on Saturday, Sept 26, at 11 30 A M

THE LANCET

LONDON SATURDAY, SEPTEMBER 26, 1942

STAPHYLOCOCCAL NURSERY

MEDICAL officers of maternity institutions, more particularly those emergency homes adapted for expectant mothers evacuated from the larger towns, have been impressed with the increasing frequency of staphylococcal infection among the babies These infections may take a variety of forms—blepharitis, septic spots and paronychiæ, pemphigus, pneumonia and so on—and there is a strong tendency for each of them to breed true for instance, pemphigus neonatorum and staphylococcal pneumonia seldom occur in the same outbreak in spite of the fact that the frequent involvement of the face in pemphigus would seem to favour an aerogenous pneumonia Blepharitis or "sticky eyes" is the commonest form of staphylococcal infection among the newborn, and although it has often been noted as a precursor or accompaniment of pemphigus there is not necessarily any close connexion between the two infections Most infants are unaffected by the blepharitis, which usually clears up quickly and is unassociated with skin infection Septic spots and paronychiæ may affect several infants within a short period, suggesting a case-to-case spread, and according to CASS[1] the infections often coincide with the development of colds among the mothers These superficial follicular pustules do not disturb the child's general health but must be distinguished from the dull red papular rash of generalised sepsis or the septic spot which is really a subcutaneous abscess

Pemphigus neonatorum or bullous impetigo is characterised by the formation of dome shaped bullæ with clear straw-coloured contents, the blebs rupture and desquamate readily, leaving red, moist, glistening patches which heal quickly Sometimes desquamation occurs without vesicle formation and may be widespread, when the condition is called Ritter's disease or exfoliative dermatitis of infants Many outbreaks of pemphigus neonatorum have been described, and there is now general agreement that *Staphylococcus aureus* is the causative organism BENIANS and JONES,[2] who reviewed the essential features of the infection, failed to substantiate Almquist's claim that the pemphigus staphylococcus had distinguishing cultural characters, although FALLS[3] and others showed that it differs from other staphylococci in producing vesicular lesions when inoculated into man, and there is little doubt that nurses can be secondarily infected from infants The primary source in any nursery outbreak is to be looked for particularly in skin lesions among mothers or nursing-staff Routine swabbing of nose and throat is of little value, because over 90% of infants in nurseries are likely to be nasal carriers of *Staph aureus* and the carrier-rate among nurses may vary from 20% to 50% Nor is examination of the mother's milk likely to help, for more than half the milks from nursing mothers contain *Staph aureus*[4] Unfortunately serological typing of the staphylococcus is still a research, and the number of differentiated types is too small to allow conclusive deductions about sources to be drawn from this technique[5] We must therefore try to discover the factors which predispose to outbreaks of pemphigus and devise methods for the control of an outbreak when it occurs

The high incidence in emergency maternity homes may be associated with difficulties of adequate staffing and isolation accommodation Cheap soaps are apt to be irritating and should be avoided for washing babies, more use being made of oils for rubbing into the skin But the most important precaution is to keep a sharp lookout for any skin lesion on infant, mother or nurse, and treat it at once with 5% sulphathiazole ointment or "blue paint" (pigmentum tinctoreum *NWF*), preferably under bed-isolation conditions When an outbreak occurs, the wisest course is to close the home to new cases until infected and exposed infants have all been discharged and the home has been thoroughly cleaned and disinfected, for the infecting staphylococcus may persist in the dust Anything short of this, such as isolation of infected infants, wearing of masks and disinfection of baths or of the wards, may fail to check the spread of infection[6] Fortunately the infection in most recent outbreaks has been mild and fatalities have been rare

MORALE

SOME say that morale, like marriage, friendship and good neighbourliness, is an interhuman phenomenon which gets along all right as long as one does not talk about it Our own morale has remained high for the last three years under grave adversities, but its hardest test may still be to come, we should therefore think of all possible ways of maintaining it, and there can be no harm in discussing it as a problem in social psychology The term morale is vaguely used by political speakers and writers, and is variously defined even by psychologists According to MCDOUGALL[7] "group spirit" depends on each individual member having a clear knowledge of the group and his place in it as well as a devotion to the group This shows the double aspect of morale, one intellectual and one emotional, practical measures to maintain it will be influenced by which aspect is considered more important

VERNON[8] has studied a number of human qualities generally regarded as linked with morale to find how far they are interrelated in the psychological make-up of the individual He chose 17 qualities intelligence, cheerfulness, stubbornness, considerateness, determination, openmindedness, adaptability, tolerance, idealism, acceptance of hardship without complaint, constructiveness, stolidity, trustfulness in leaders, optimism, stability, health and vitality, and self-confidence He asked a group of psychologists and senior students to rate themselves and their acquaintances on these qualities according to a scale which gave three major degrees for each quality. Self-confidence, for example, was graded as (a) outstandingly confident and well adjusted in all phases of life, (c) generally confident but some anxieties or minor maladjustments, (c) anxious, worrying, timid in personal and social adjustments, (b) and (d) represented intermediate shades of difference In this way 50 ratings of professional people, such as the raters themselves, schoolteachers or their relatives were collected The same assessors were then given records of interviews with a group of 23 people unknown to them—mostly factory workers, small shopkeepers and the like—and asked to rate them on the same scale The interviews had been carried out by trained interviewers in an endeavour to ascertain attitudes to the war Since each of these records was assessed by two or three people the total number of ratings in this group was also 50 The findings in the two groups differed in some respects, thus the raters, who themselves belonged to the professional group, laid stress on the value of a rational, liberal, altrocentric outlook, which, though present in both groups, was more common among the professional subjects Nevertheless they found an underlying common factor in both groups, made up of qualities which seem to hang together, the chief being confidence, optimism, trustfulness, resistance to hardship and cheerfulness This general factor, it is interesting to note, was more easily recognisable among the interviewed group than among those with whom the assessors were well acquainted, as though in order to form snap judgments of people it is necessary to know them superficially rather than well

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[1] Cass J M *Arch Dis Childh* 1940 15 85
[2] Benians T H C and Jones B H *Lancet* 1929, i, 174
[3] Falls, F H *J infect Dis* 1917, 20 86
[4] *Mon Bull emer publ Hlth Lab Serv* February 1942, p 9
[5] Cowan S T *J Path Bact* 1939 48, 169
[6] *Mon Bull emer publ Hlth Lab Serv* September 1942, p 2
[7] McDougall W The Group Mind London 1920
[8] Vernon, P E *Character and Pers* 1941 9, 283

The investigation had the disadvantage, of course, of being based largely on opinions, not on behaviour In a later inquiry into war attitudes VERNON[9] sent out a questionnaire asking people not only for their views on current political issues, but about their war-work, savings, hardships, newspaper reading and other war activities This was answered in April, 1941, by 230 subjects who, though not representative of the general population, showed a wide range of income, education and age Their human background, sex, age, economic level and education were taken into account and correlated with their reactions to the war Many of the results could have been anticipated, but the wide variations are striking and so is the strong evidence against over-simplified labels, like "reactionary," "complacent," "defeatist," which we are inclined to apply to other people With regard to morale, knowledge and education appeared to act in the same direction as personal bombing experience both make people more critical, and reduce irrational opinions, yet both may lead to greater war effort and good citizenship This work is relevant to the theoretical views of JOSEPH GEOGHEGAN[10] who stresses the emotional aspect of morale to the exclusion of all others "Morale is a feeling, not an intellectual opinion" Suggestibility, reduction of individuality, reversion to impulse and action of a more primitive type, childish pattern of behaviour—all well known clichés from LE BON's *Psychology of the Masses*—are for him the mechanisms underlying morale. Factors increasing morale are therefore, in his view, a sense of unity, comradeship, and belief in positive ideals on our own side, coupled with negation of all good on the enemy's Fatigue, under-nutrition, fear, inertia, monotony and inactivity exert a depressive influence on morale He doubts whether the positive factors can be deliberately influenced, but thinks the problem deserves attention, especially in regard to "the shifting unstable masses of a civil population exposed to novel and dangerous stresses" This remark sounds rather out of touch with reality in view of the response of people in our bombed cities, but it would be a mistake to brush aside GEOGHEGAN's views as a whole as out of date, and it would be a misleading over-simplification to call the morale he describes as the "German type," and to contrast it with the more critical and more intellectual British group spirit The attitudes of the French, before their collapse, were probably as rational and critical as our own, the collapse itself followed an entirely emotional pattern Nazi morale, which from outside seems to be built entirely on emotion, mass suggestion and herd instinct, has still to stand the test of adversity But German internal propaganda does not rely on emotion alone GOEBBELS likes to tell his countrymen that they are the best informed and most intelligent people in the world British morale in this war is still predominantly rational and intellectual—widespread and fantastic rumours have been rare, and blind fervour, emotional propaganda, and any stirring up of hatred have been widely criticised If those who support the war in the hope that it will lead eventually to a more rational and democratic organisation of society are still a minority, they are as VERNON points out more numerous and more vocal than in any past wars It should make the task of those who have to care for our morale easier if they can work on intellect and reason instead of playing on emotions How to do it without upsetting the emotional side of morale, which is probably more vulnerable because less vocal in this war, would be worth studying

THE SPECIALIST IN THE FORCES

THE practice of medicine in the Forces has been criticised repeatedly and defended as often, but few writers have dealt with specialist work A large number of specialists in the Forces are young men at the beginning of their careers, and although a few are idle most are doing some work Unless they are very unreceptive these young specialists are learning important and invaluable lessons, the physicians not much less than the surgeons There is no way of shirking decisions in the Forces as there is in civil life, this may not be the general impression, but it is so When a man is sent to a specialist there is no dodging the problem, the specialist must make up his mind clearly and definitely about diagnosis, treatment and disposal, and his advice must bear a realistic relationship to circumstances He cannot always be right, but he is learning to make decisions on clinical grounds—almost a lost art—and with increasing experience and confidence the number of errors falls. Gone are the happy days of vague phrases and liquid placebos The bureaucratic mind demands a label, a recognised standard name for every lesion, and it is thus unconsciously forcing the younger generation to think clearly and precisely about its clinical problems, forcing it to give up woolly thinking or writing pompous reports designed to hide a complete absence of ideas In military hospitals, too, the highly trained nursing staff of civilian hospitals is largely replaced by unskilled personnel Young specialists working in well-staffed highly systematised hospitals take for granted a large amount of hospital work and organisation without knowing how it is done The physician orders various nursing treatments without knowing in detail how to do them himself , or the surgeon walks into the theatre, dons his sterile gloves and proceeds to operate without any idea of how to sterilise those gloves or how to prepare that theatre In the Forces they are brought face to face with these fundamental problems No longer does the surgeon waste his time on academic discussions of the hundred-odd operations for recurrent dislocation of the shoulder-joint , he is too busy learning how to work the autoclave or cut swabs or rub plaster, in order to train his orderlies correctly This training is ample recompense for the slowing down of clinical and technical development But perhaps the most useful feature of medical practice in the Forces is the opportunity it gives for acquiring an improved knowledge of prognosis Under the civilian system the hospital staff rid themselves of the patient as soon as they can, and learn at second hand if at all how long he takes to recover fully, while the practitioner is often left to cope under unsuitable conditions with a patient who really needs longer hospital treatment and supervision This situation does not arise in the Forces, because it is useless sending an unfit man back to his unit He is a burden to himself and everyone else, and must be retained by the medical services until he is fit This has brought some nasty surprises, but the ultimate effect on the specialist will be excellent, for he is developing a better knowledge of the natural history of diseases, a more cautious view of the speeds of recovery, and a clearer understanding of the large gap that exists between “ fit for discharge ” and “ fit for work ”

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[9] *Brit J med Psychol* 1942, 19, 271

[10] *Nature, Lond* 1942, 150, 9

SUPERLATIVE ASEPSIS

THERE are as many variations in sterile surgical techniques as in the allied field of religious ritual , and in both there is an ideal of ultimate purity, seldom attainable but serving as a goal towards which disciples may strive Professor GUDIN [1] of Rio de Janeiro seems to have approached the goal in his operating technique and when new theatres are being planned his ideas deserve consideration He recognises three phases in surgery the first, lasting centuries, characterised by ignorance of micro-organisms , the second, which began with LISTER, notable for partial control of bacterial action and the appearance of healing by first intention , and the third, which we are now approaching, the phase of total sterilisation, in which a new type of healing will be the rule—something that might be called Pasteurian cicatrisation Healing by first intention, as seen in an operation wound, he points out, is healing of a wound contaminated by the air of the theatre , there is an inflammatory reaction in which the healing response of the body quickly gets the upper hand That the air in the theatre carries infection under ordinary conditions can easily be demonstrated—gloves and instruments sterilised, covered with agar and exposed in the theatre quickly grow colonies of organisms, some of them pathogenic The air, as GUDIN shows, can only be sterilised if the walls and equipment are sterilised at the same time He does not despise air-conditioning plants and ultraviolet lamps as accessory aids, but he regards them as inadequate when used alone because they act solely on the air He has devised a “ total steriliser,” which, placed in the hermetically closed operating-theatre and controlled electrically from an adjoining room, sterilises the whole theatre and its contents The apparatus first liberates formaldehyde in an atmosphere saturated with moisture, and after this has done its work ammonia is released To remove the hexamine thus formed the air is pumped through a solution of tartaric acid, and the air-conditioning apparatus is put in operation The hexamine is soluble in water and any excess of ammonia combines with the tartaric acid That the air, walls and equipment of the theatre are thus rendered aseptic is shown by exposing agar plates after the total steriliser has been at work , they remain sterile

Only the surgeon and his team and the patient are allowed into this sterilised theatre Students watch operations through a glass panel let into the ceiling, and the ceiling is specially low to give them a good view The operating team reach the theatre through four previously sterilised anterooms—two for the preparation of the patient and two for the surgeons’ preliminaries Surgeons and patient discard all clothing before entering the sterile rooms and are dressed in sterile overalls made to cover the entire body like diving suits The surgeons’ hands are prepared by scrubbing with a succession of sterile brushes for 10 minutes The patient’s skin at the operation site is cleansed with benzene and then treated for at least 10 minutes with a freshly prepared 10% iodine tincture The anæsthetised patient is wheeled into the theatre on a mobile operating-table, to which instrument trays and discard bags are attached so that the whole unit can be removed to make room for the next patient The surgeons wear goggles as well as masks and gloves and do not speak while in the theatre , no-one with an upper respiratory infection is allowed in Sweating is prevented by careful air-conditioning

GUDIN’s precautions are aimed at excluding the three main sources of wound contamination in the theatre—the air, the hands of the surgeon and his assistants, and the patient’s own skin His sterilisation of the air seems bacteriologically irreproachable, but the method of using ultraviolet light as practised by DERYL HART [2] is simpler though not so comprehensive Much of this air-sterilisation should, however, be unnecessary if one could be certain of preventing contamination from the respiratory tracts of the theatre occupants and from the hair, clothing and skin of the operating team Efficient masking is a sine qua non, and changing of clothing and shoes should be an invariable rule Spectators must be screened off by glass, though the student will lose a lot by not hearing the surgeon’s comments , there is much to be said for a running commentary by someone other than the surgeon In one Canadian unit the surgeon wears a small sterilised microphone attached to his gown, through which he can broadcast to students or dictate to his secretary Goggles, as worn by GUDIN, shield the eyebrows, which commonly contain staphylococci And it is well to remind the junior nursing staff of the theatre to have their hair completely covered, the patient, too, especially when the operation is being done under local anæsthesia, often lies unmasked and uncapped The practice of bringing the patient into the theatre covered with blankets from the ward, teeming with streptococci, could be stopped now, without waiting for the days of super-sterility With simple care these sources of infection can readily be excluded, and RICE, WEED and RAIDT,[3] having made a thorough bacteriological study of the subject, conclude that "the bacterial content of the air in the operating-room may occasionally be a source of infection, but its importance has been grossly overemphasised" One of the most potent sources of wound infection is the surgeon's or assistant's hands via the pricked glove DEVENISH and MILES[4] have shown that some 15% of unpatched and 24% of patched gloves are found to be punctured after the operation, and they actually traced an epidemic arising from a surgeon's hands carrying *Staphylococcus aureus* HIRSHFELD[5] recalls that HARVEY CUSHING, who had an extremely low sepsis incidence in spite of his hands being exposed to unsterilised air during long operations, always wore heavy gloves The non-touch technique is an added but still not complete protection against these accidental punctures Unfortunately a multitude of brushes and repeated scrubbing for 10 minutes will not ensure complete sterility of the hands According to PRICE[6] there are two types of organisms on the skin—the transients and the residents Washing will get rid of the transients but the residents are more securely dug in As COLEBROOK[7] has shown, 5 minutes washing is usually ample, and more, especially in busy times, will severely damage the surgeon's skin He has also demonstrated that it is better to wash in a little water, say 3–4 pints, with plenty of soap, than under the running tap, for most of the pathogens commonly met with in surgical sepsis are readily killed by soap Cleaning the patient's skin as recommended by GUDIN is sound, but the fair-haired Englishman's skin will not tolerate 10% iodine COLEBROOK has in fact shown that 2% iodine in tincture or watery solution for 3 minutes is sufficient, and liquor chloroxylenolis (or antisepticus) of the NWF is just as efficient But all this care—the surgical fiddle-faddle, as CLIFFORD ALLBUTT called it—will come to nought if sterile technique is discarded at the subsequent wound dressings, and there are still too many surgeons who have not digested, even if they have read, the MRC memo on hospital wound-infection[8]

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[1] Gudin, M *Ann Surg* 1942, 115, 452

[2] Hart, D *Surgery*, 1937, 1, 770

If any surgeon thinks his results are not capable of improvement in relation to infection, he will probably be disillusioned if he keeps records of postoperative wound reactions as well as of more serious infections The enthusiast for chemotherapy will remark that preoperative and postoperative sulphonamides will shield his patient from all hazards, but the happy day has not yet come when we may feel so sure of our power to immobilise invading bacteria that we can cheerfully let them in Chemotherapy must still be a reserve line of defence

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[3] Rice, T B, Weed, L A and Raidt, H *Surg Gynec Obstet* 1941, 73, 181
[4] Devenish, E A and Miles, A A *Lancet*, 1939 i, 1088
[5] Hirshfeld, J W *Surg Gynec Obstet*, 1941, 73, 72
[6] Price, P B *J infect Dis* 1938, 63, 301
[7] Colebrook L *Bull War Med* 1941, 2 73
[8] Prevention of "Hospital Infection' of Wounds MRC War Memo No 6 HMSO 6d

Annotations

MORE PÆDIATRIC PLANNING

SINCE the last reference to this subject in these columns[1] the word "pædiatrics" has been admitted to the columns of the *Times*[2] without a protest from Mr A P Herbert, and Prof L G Parsons has submitted a memorandum to the board of management of the Children's Hospital, Birmingham, on the improvement of teaching in pædiatrics in the University and for the provision of a pædiatric service for Birmingham and district To these notable events may be added the establishment of a chair of child health in the University of Durham to be filled by Dr J C Spence Industrial Newcastle thus follows the precedent of industrial Leeds where Dr C W Vining holds the chair of children's diseases Prof Parsons starts off with the important observation that pædiatrics is not a specialist subject but one which concerns the general study of children in health and disease and is not limited by one aspect of disease or by disease of one organ Prof G B Fleming has made the same point clear[3] For this reason, children's hospitals are not special hospitals, indeed they are more "general" hospitals for children than the so called general hospitals, some of which exclude diseases like pulmonary tuberculosis Thus any scheme which plans reorganisation of the hospital services along the lines of taking the special hospitals more directly into the orbit of the general hospitals must not assume that the children's hospital can be classed with (say) ophthalmic or gynæcological hospital Pædiatric planning indeed starts with the children's hospital as the centre of activities for the care of the child in health as well as sickness

London is planning on these lines also, according to a letter[4] from Lord Southwood, chairman of the Hospital for Sick Children, in which he indicates that he is also chairman of a "committee for the coordination of the medical services for the children of London" which appears to have started with the hospital services as the essential feature of the future of pædiatrics Both in Professor Parsons's memo and in the *Times* article it is clearly shown how this may be brought about The pædiatric surgeon (and indeed the pædiatric physician) takes little or no part in public preventive or social medicine, while medical officers in the child welfare and school medical services are often overburdened with administrative duties to the detriment of their clinical work Both groups have their contribution to make to the study of the child in health and disease and yet they are apt to be suspicious of one another In Birmingham it is suggested that the Children's Hospital should be closely linked with the pædiatric services of the city and region The whole of these services would then be available for teaching purposes and their medical officers would receive postgraduate instruction at the hospital and be eligible there for posts as clinical assistants Contrariwise members of the hospital staff would be available for work at welfare centres Professor Parsons would also like to see an infant welfare centre developed at the hospital, a home for cardiac cripples, a "preventorium" for children with the primary tuberculosis complex, an extended almoner's department to form a real social service department, as well as education facilities and a development of occupational therapy An interesting suggestion is for a "humanity" department where telephone and personal inquiries can be answered in kind and simple language Many other suggestions appear in the Birmingham scheme which have a wide application

Following the primary need of a comprehensive service, and complementary to it is the question of the education of the medical student. The modern student, the *Times* hopefully remarks, is interested in children, but with only the possibility of a question in his final examination, and so much else to make sure of, he takes the chance of getting qualified without any real knowledge of the child in health or sickness. In Canada and America pædiatrics has its place in the finals alongside medicine, surgery and midwifery. To teach pædiatrics—not merely diseases of children—in its full curative and preventive aspects implies the coöperation of children's hospitals and public health work and efficient training of the whole personnel from hospital nurses, health visitors and school nurses, right down the scale to the family nanny, if such a worthy person is still to be found in the post-war world. Indeed training of workers in the pædiatric field should be the first task of any new national service for children's health. Prof Chas McNeil writing more particularly of the newborn baby has stated bluntly[5] that in this respect the state of preventive pædiatrics in this country is second-rate; but he is convinced, as was quoted in these columns recently, that this can be put right by teaching and training. At the moment organised medicine is in danger of dropping behind public opinion in this matter. Of course pædiatrics is a major subject. Its future developments have a national importance. The blue prints for Birmingham, London or Durham must be on view for all to see.

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[1] *Lancet* Aug 15, p 190
[2] *Times*, Sept 12 p 5
[3] *Lancet*, 1942, i, 631
[4] *Times*, Sept 17 5

THE THOMAS SPLINT

Hugh Owen Thomas would still have been a major contributor to orthopædic surgery if he had done no more than design the knee-splint which bears his name. Diggle on another page reminds us, if reminder were necessary, of the efficiency with which fractures of the femur can be treated in it using skin-traction by strapping. As he points out, the main criterion of success in estimating the results of treatment is not the amount of shortening—provided this does not exceed three quarters of an inch, within which it is easily compensated for—but the final range of movement in the knee. If the knee cannot be bent to a right angle a year after the fracture the treatment must be regarded as having failed, for this range should have been regained within the first 9 months. At the end of the period of traction the patient treated with a transfixion pin and the knee flexed may have an impressive range of motion, while at the same stage after skin-traction on a Thomas-splint the knee may be almost completely stiff, yet it is a common experience for recovery in the latter case to outstrip the former rapidly and to reach full, or nearly full, movement while the other may never do so. Because the efficient use of the Thomas calls for painstaking and continuous attention to the numerous details of slinging, support and extension, there has been in recent years an increase in the popularity of the Braun frame used with skeletal traction as a simple and less laborious mode of treatment in which the patient can be left to his own devices after the primary reduction. Excellent results can thus be achieved, but, apart from the avoidable dangers of over-extension and infection of the pin-track, the frame is not a splint and there is relatively little control of the upper fragment, especially when the fracture is in the upper shaft. Armstrong[6] has pointed out its inefficiency in dealing with fractures of the upper third, advocating a return to the Thomas for this injury. Diggle's article is timely as a vindication of old-established method now when fractures of the femur have to be treated in places where the Thomas splint and the simple apparatus that goes with it is the only means available. It is important therefore that the supply of splints to each centre should embrace an adequate range of sizes with gradual increases of 2 inches between the extremes, and that splints should be the right length. Otherwise it may be impossible to fit the splint to the patient's thigh, to add a windlass for fixed traction and to transport patients comfortably, and hospital splint rooms may be cluttered up with a host of useless, because ill-designed and hurriedly made, splints—a situation familiar in the early days of the present war.

LOSS OF LIFE IN TWO WARS

Greenwood[1] has shown that loss of life in the British armed forces in the wars of 1794–1815 and 1914–18, in relation to the male population, was about the same. If account is taken of civilian losses of life directly or indirectly due to the war, which were important in 1914–18 and negligible in 1794–1815, the number of deaths was relatively greater in 1914–18. Greenwood's comparison of the deaths in the two wars is summarised in the following table compiled by Isserlis. In the last column the totals for 1914–18 are divided by 2·5, the ratio of the male populations of the United Kingdom in 1911 to that in 1811.

1794–1815		1914–18		
		As recorded		After division by 2·5
Navy—		Navy and Merchant Marine	48 000	
By enemy action	6 663	Land Forces	724 000	
			772 000	
By marine risk less peace totals	11 905	Deduct peace totals	65 000	
By disease &c less peace totals	44 662		707,000	
	63 230	Deduct 22% for Dominions	156,000	
Army (similarly calculated)	143 808		551,000	220 000
	207 038	Sea passengers and civilians killed in raids	8,389	
Civilians— By enemy action i e, in privateers	?	Underestimated say	4,111	5 000
			12 500	225,000
By excess of civilian mortality	Nil	Excess civilian mortality not including influenza	187 500	75 000
Say	210 000	Say		300,000
Loss of births	Nil	Loss of births say 500 000 to 700,000		240,000
	210 000			540 000

Detailed and reliable figures are not available for the period 1794–1815. Official publications relating to the Navy were confined to numbers of men voted, and returns of killed and wounded. The War Office compiled more statistics but they were defective and incomplete. The figures shown in the table for 1794–1815 are chiefly the estimates of W B Hodge.[2] The comparatively small number of deaths caused by direct enemy action and the large number due to disease and accidents of war is remarkable. Hodge made the ratio of non-battle to battle casualties 8 to 1. In 1914–18 (land forces) it was 1 to 5·3. Hodge's method of obtaining the number of additional deaths in the Navy arising from disease and ordinary accidents caused by the war (the figure 44,662 in the table) is interesting. He estimated the average number of men serving annually in ships at sea as 110 180. He then calculated that these men were subject to an additional risk of death through disease or accident owing to the war, at the rate of 16 per 1000. This in 20·45 years of war gave 36,051 as the number of additional deaths caused by disease or accident as a result of the war. But allowance had also to be made for the fact that some 70,000 of the 110,180 men serving were civilians who were subject to an increased risk of death while serving as sailors, quite apart from the war Hodge adds the difference between the expected deaths as civilians and the expected naval deaths to his 36,051, giving a total of 44,662 Greenwood's net figure of casualties in the armed forces in the 1914–18 war is obtained in a similar way, by deducting from the total number of deaths the estimated number of civilian deaths He emphasises that his comparison is made from a purely arithmetical point of view "Economically and psychologically a bill which must be paid within four years is more onerous than one which is discharged by twenty annual payments" Apart from the different length of the two wars, there were two heavy costs in terms of human life in the 1914–18 war which did not apply in that of 1794–1815 Losses of life due to direct enemy action against the civilian population or disease consequent on a lower standard of living were negligible in the war of 1794–1815 There is good evidence that the general health of the people improved during the war, partly due to a higher level of real wages The case was far different in 1914–18, when 6330 sea passengers were drowned and 2059 civilians were killed in air-raids or coastal bombardment In addition the death rate increased Vedel-Petersen[3] estimated excess civilian mortality in England and Wales during 1914–18 at 281,000 Of these more than 130,000 belonged to the pandemic of influenza Opinion differs on what proportion of these excess deaths, particularly those caused by influenza, was due to the war A further factor in 1914–18 was the loss of births Sir Bernard Mallet estimated the shortage at 500,000–700,000 In 1794–1815 there is no reason to suppose that the war affected the birth rate at all, since the overseas armies were small It is interesting to contrast civilian and service death-rates in the two wars In 1794–1815 the annual deaths among serving men, additional to an estimated civilian rate of 10 per 1000, were at the rate of 32 8 per 1000 In 1914–18 the civilian rate was 4 8 per 1000 per annum and the annual deaths additional to this in the armed forces were at the rate of 52 3 per 1000

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[5] *Brit med J* 1942, i, 429
[6] Armstrong, J R *Lancet*, 1940, i, 957

[1] Greenwood M *J R statist Soc* 1942, 105, p 1
[2] *Ibid*, 1855, 18, 201, 1856, 19, 219

POSITIVE CONVALESCENCE

TODAY we must all help to make the wheels go round and we cannot afford to carry passengers, so economy supports humanity in the demand that everyone who falls ill or is injured should be completely restored as quick as possible The EMS rehabilitation centres, where groups of patients with similar lesions are collected and treated together, give good results and are sparing of equipment and trained personnel But at the congress of the Chartered Society of Massage and Medical Gymnastics on Sept 18 both Prof John Ryle, who gave the opening address, and Prof F R Fraser warned these trusted handmaidens of medicine against the dangers of overspecialisation Ryle told the masseuses that they were the mediators between disease and health , whatever happened we should need them badly For the future, he thought, they would need a better appreciation of the purpose of their work, closer cooperation with other branches of the medical and health services, and a broader training in their craft They must learn to see the patient not only in terms of his injury but as an individual against the background of the community Both Ryle and Fraser were sure that simple improvised apparatus could give better results than expensive and stereotyped routine (it was Opie who, when asked with what he mixed his paints, replied "with brains, Sir") and Fraser, while giving the mass methods of war time their due, cast a nostalgic glance back to the old days when each patient was a problem whose rehabilitation must be provided within the limits imposed by his habits and environment Today the work of the masseuse, the physical training instructor and the occupational therapist tend to be limited each to its own sphere But tomorrow we may well want a paragon who will combine the skill of all three with the insight of the psychologist and the zeal of the social worker, for in Ryle's words, we shall not only be mending broken men but a broken world Ministers of the Crown are vying with each other in their adulation of toughness, fitness and physical development, but as Lord Horder, president of the society stressed, it would be up to us to keep the ministers to these ideals when the hurly burly is over

MEDICAL JUDGE

HIS HONOUR DIGBY COTES-PREEDY, KC, was a truant from medicine After being house physician at St George's and editor of the hospital journal, he read for the bar and was called by the Inner Temple in 1904 But he could not and would not forgo his medical background, and whether as advocate in the divorce court or as judge on circuit he had the informed and sympathetic outlook of the biologist on the events of human life He made a special study of the law relating to hospital authorities and was a lively member of the departmental committee on coroners "Competent and popular" certainly, in the words of the *Times*, and more than that for he had the double gift of interpreting medicine to the legal mind and almost of justifying the law to the medical mind He will be missed both by bar and bench

UNSIGNED COMMENT

ON another page Professor Fisher writes with feeling about the abuses of anonymity, taking as his text an unsigned review in our own columns and comparing it with a signed review of the same book in another weekly journal From his quotations it appears that the unsigned review was the more critical of the two and he thinks that readers of THE LANCET would have been better served by being told the identity of the reviewer, so that they could judge for themselves the value of his opinion Professor Fisher suggests that the reviewer who comes out into the open is less likely to say things which he cannot substantiate—putting it more baldly, to talk through his hat If that impression were true Professor Fisher would have proved his case, and it would follow that all expressions of critical judgment, whether in reviews, leading articles or annotations, should be attributed to their multiple sources, which would be impracticable if not absurd But is it true? Dr A writes a monograph on a new subject or develops a theory to explain some old observations and Dr B gives his opinion on it in a signed review It will be plain sailing, though no mean task, to set out briefly the gist or message of A's work, and praise or minor criticism will present no difficulty But if he has reason for major criticism B may give offence or involve himself in interminable argument by writing frankly, so he may well say less than he thinks Dr C, on the other hand, when he drafts an unsigned review, will tell the editor all that is in his heart and look to him to put it in proper form The editor will then exercise his function as a clearing house of informed opinion by bringing C's comment into line with other views There is little scope here for the exploitation of anonymity and a rather long experience suggests that author and reader are gainers although the reviewer may sometimes suffer

MR SHEFFIELD A NEAVE, DSc, CMG, is to fill Dr Julian Huxley's place at the Zoological Society of London until the spring annual meeting He is believed to know most of the 225,000 genera, large and small, of the animal kingdom, but quite certainly has an intensive knowledge of the insects harmful to human progress, especially the tsetse fly As travelling pathologist and naturalist he follows in the footsteps of his father, whose name he bears, a naturalist who took up medicine late in life and had the naturalist's eye for small variations from the normal

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[3] Losses of Life Caused by War By Samuel Dumas and K O Vedel Petersen Oxford, 1923

Special Articles

HONG-KONG ON THE EVE

P B WILKINSON, M B LOND, M R C P
ATE MEDICAL OFFICER IN THE COLONIAL SERVICE AT HONG KONG

HONG-KONG proper is a small island 36 sq miles in area lying off the south coast of Kwantung province The whole colony embraced many other islands and a mall area of the mainland which stretches inwards from the Kowloon peninsula for about 20 miles The island s just within the northern tropic and has a subtropical climate that is to say from May to October when the south-west monsoon is blowing, the maximum day temperature averages 87° F and the relative humidity is also high, from November to May, the so-called winter period when the north-east monsoon is blowing, the maximum day temperature averages 66° F and the weather is agreeable The annual rainfall is about 70 in and most of this falls during the hot season

When the English took Hong-Kong from China in 1841 after the victorious conclusion of the Opium War, the island was a barren, inhospitable and uninhabited rock Although it was occasionally visited by pirates it was for the most part avoided by the Chinese of the adjacent mainland because malaria was rife A hundred years of English occupation have done a little to improve the island, which is now habitable It is still comparatively treeless and flowerless, and vigorous attempts at afforestation have only succeeded in making it look like the dream of a third-rate horticulturist with a passion for conifers A gigantic city, Victoria, has sprung up on the landward or northern coast of the island and it is confronted by a slightly smaller city, Kowloon, on the mainland It may be said with truth of the English, that they carry two things all over the world—their beer and their architectural vulgarity Both abound in these two cities, but Victoria takes precedence over Kowloon for the vast extent and unparalleled squalor of its slums

These two cities have grown up because Hong-Kong, by virtue of its position at the mouth of the Pearl River offers easy access to Canton, the capital of South China The enormous entrepôt traffic which developed during the last century made Hong-Kong one of the biggest and wealthiest ports in the world Its population in 1937 was approximately 800,000 By the end of 1942 that figure had risen to 1 750,000, because of the unceasing influx of refugees and other victims of Japan's war of aggression on China Before the outbreak of the Sino-Japanese war in 1937 it was estimated that 10 000 ships cleared the port every year When one remembers that in addition to this immense sea-borne traffic there was a daily inflow and outflow of 8000–12,000 from the mainland to the island and back, it is easy to realise how vulnerable the island was to those epidemic diseases which prevail in the Far East During the last few years the development of air-lines increased this danger, and the story of medicine in Hong-Kong during the last few years was early the story of the efforts made to combat the threats to the island from air-borne, sea-borne and land-borne diseases

Air-lines running to and from the colony were few, and the passengers were examined on arrival The one great danger which faced health officers responsible for the control of air-borne passengers was yellow fever, but stringent precautions were taken by all countries interested which successfully prevented the importation of this disease Sea-borne traffic, when one is dealing with ocean-going ships alone, was comparatively easy to cope with since the introduction of radio-pratique in 1938, though I have seen cases both of cholera and typhus which arrived in Hong-Kong by sea But the innumerable junks and sampans which plied between the island and the mainland, and the coastal ports, presented an insoluble problem

The risks from land-borne traffic were perhaps gravest of all Hong-Kong has been a free port since the English took it in 1841, this means that no restriction of any sort was imposed on immigrants from the mainland of China This state of affairs adds intolerably to the burden of health officers, and unsuccessful attempts were made to exercise some control over mass immigration For political reasons it was obviously not expedient to introduce any drastic restrictive measures during the last four years against people who were soon to be our allies, and those measures which were introduced were speedily nullified by the intelligence and ingenuity of the Chinese For example, it was suggested that a poll-tax of ten Hong-Kong dollars be imposed on each immigrant, our twenty-mile land frontier was instantly manned by smiling money-lenders brandishing the necessary notes and recovering them at a handsome profit when the frontier formalities had been complied with During the four years 1937–41 immigrants and refugees poured into the colony in an unceasing stream and the daily tidal population also increased considerably These factors, coupled with a steady fall in the standard of living and housing conditions greatly increased the incidence of epidemic disease and deficiency diseases in the colony, and the mortality from beriberi and pellagra, for instance rose to unprecedented heights during the last two years

THE PRODUCTION OF ANTIBODIES

OUR knowledge of the processes by which antibodies are formed is very incomplete It is not even known for certain what cells in the body are responsible for the production of antibodies Current theories fail to explain certain characteristics of antibody production Antibody activity is generally accepted as a function of modified serum globulin molecules, and the essential problems are to determine how normal serum globulin is produced and how antigens introduced into the body can influence the cells concerned so that specifically modified globulin is formed An alternative hypothesis of antibody production has been suggested by Burnet and his colleagues at the Walter and Eliza Hall Institute, Melbourne[1] Recent work supports their conclusion that antibodies correspond physically to the globulins normally present in the same animal species and the type of globulin utilised varies with the animal species and the type of antigen concerned For example, specific pneumococcal antibody in the rabbit and man is associated with globulin molecules of normal size, while this antibody in the horse is associated with heavy globulin molecules such as are present in only small amounts in normal horse serum, diphtheria antitoxin prepared in the horse, however, is found in pseudoglobulin molecules not different in molecular weight from normal The Melbourne workers suggest that the plasma proteins probably serve as a mobile store of protein, and the disappearance of antibody from the blood of an immunised animal may be due to its destruction and utilisation for protein reconstruction Of the globulin increase during immunisation not more than 30% is accounted for by antibody and it seems likely that a considerable proportion of normal serum globulin is prepared by the cells responsible for antibody production

Certain deductions about the mode of formation of antibody can be made by considering the rise and fall of antibody in the blood after first and subsequent injections of antigen into animals In illustrative experiments with different kinds of antigen done in Melbourne the difference between the primary and secondary antibody response was greater after injections of toxoid than after injections of bacteria or bacteriophage, while the secondary response was not demonstrable in the type of experiment carried out with the rickettsia of Q fever or herpes virus With most of the antigens, however, a logarithmic increase in antibody could be shown to occur under suitable conditions over a short period This logarithmic increase can be accounted for by the hypothesis that there results, from second injections of antigen, proliferation of the antibody-producing mechanism so that over a short period a progressively increasing number of units come into play, these may be cells or subcellular units The later phase of the antibody response varies with different antigens When certain antibodies are transferred passively to an animal the rate of fall is rapid and logarithmic but this does not occur after active immunisation when the fall becomes slower with time This is probably due to continued production of antibody at a diminishing rate and a steady removal of antibody at a rate proportional to its concentration It is suggested that the different types of antibody response evoked by different antigens in the same animal species may be related to differences in the groups of cells concerned with the antibody formation.

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[1] The Production of Antibodies A Review and a Theoretical Discussion F M Burnet, MD Melb, FRS With the collaboration of Mavis Freeman, BSc Melb A V Jackson MB Melb and Dora Lush, MSc Melb Melbourne Macmillan Pp 76 8*s* 6*d*

Although direct proof is difficult to obtain it has generally been accepted that the reticulo-endothelial cells in the liver, spleen and bone-marrow are mainly concerned with antibody formation following intravenous injection of antigen. The evidence on this point has not been reviewed by Burnet but he discusses the part played by the germinal centres of the lymph-glands and spleen and gives details of hitherto unpublished experiments. After injection of virus, phage or bacteria antibody was demonstrated in the lymph-nodes draining the site of injection before, or in greater amount than, in the blood. The experiments with staphylococcus toxoid were not so conclusive, perhaps owing to the diffusibility of this antigen. Experiments on local production of antibody at the injection site were negative but the findings of others have been positive. The general conclusion drawn is that antibody is produced by those phagocytic cells of the reticulo-endothelial system which ingest the antigen. Which group is actually concerned is determined by the site of infection or inoculation and subsequent spread of antigen in the body. The available evidence indicates that antigens are destroyed soon after being taken up by the reticulo-endothelial system but antibody production goes on. Although attacks of measles and yellow fever are followed by life-long immunity there is no evidence that immune persons are virus carriers in these two diseases; the long-lasting immunity must be accepted as something induced by the infection but maintained by the body after all the virus has been destroyed. Burnet suggests that the antibody concerned with allergic states is produced by tissue histiocytes near the site of infection or inoculation and differs in several respects from that produced by the reticulo-endothelial cells of the major antibody-producing organs.

Any acceptable hypothesis on the mode of formation of antibodies must take account of the immunological facts outlined above. The Haurowitz-Mudd theory of antibody synthesis in direct spatial contact with the antigen is inadmissible, if the evidence is accepted that antibody production can continue after destruction of the antigen. The central feature of the hypothesis put forward by Burnet is the use of Bergmann and Niemann's conception of the dual proteolytic and protein synthetic activity of intracellular proteinases, but it goes further. Whereas according to Bergmann and Niemann, protein is synthesised by intracellular enzymes which work up the available material until a protein exists which is stable in presence of the enzyme, Burnet suggests that the living protein molecules within the cell are themselves possessed of proteinase activity and continually produce replicas of themselves. Such proteins as those in the blood and in glandular secretions may be regarded as partial replicas of the living protein unit responsible for their production.

Antibody globulin is probably synthesised within cells of the reticulo-endothelial system by certain proteinase units of the cells. These units are modified by contact with foreign antigens and liberate partial replicas of themselves into the blood and lymph. This modification is not to be regarded as resulting from a synthesis of a new unit in spatial contact with the antigen but rather by a process analogous to the production of adaptive enzymes of bacteria. Certain bacteria, by culture for some time in the presence of a sugar not normally fermented, will acquire the property of fermenting it; contact with the sugar can impress on a bacterial enzyme a new specific power of acting on the new substrate. Similar changes in some bacterial enzymes responsible for protein synthesis have been demonstrated and in certain instances the changes are inherited. In the light of this work on adaptive enzymes of bacteria it is suggested that the primary modification of the proteinase within the antibody-producing cells is such a reorientation of its atomic structure as is necessary to allow its effective hydrolytic activity on the foreign antigen. The modified proteinase retains its modification during subsequent production of complete or partial replicas. In the absence of further contact with the antigen, however, successive new formation of replicas of the modified proteinase will probably gradually eliminate the impression and ultimately normal globulin will be produced. In the intermediate stages, low grade antibody which unites less readily with the antigen will be formed. Further contact with the same antigen will, on the other hand, intensify the impression and an opportunity will be presented for modification of other aspects of the proteinase to occur. This hypothesis explains the observed difference between antibody produced in response to a primary stimulus and that obtained at the end of a long series of injections.

The hypothesis suggested by Burnet and his colleagues has some features in common with Ehrlich's theory. The intracellular proteinase would correspond to Ehrlich's cell receptors, which by contact with antigen became diverted from their normal function and were produced in excess. Ehrlich's view that superfluous receptors shed into the blood-stream constituted the specific antibody is not very different from Burnet's conception of antibody as the partial replicas of modified intracellular proteinase. We are still ingorant of the biochemical processes involved in the formation of these intracellular proteinases and further knowledge may have to await the development of new methods. Although antibody formation by tissues cultivated in vitro has been studied by a few workers refinements in the technique of tissue culture and methods for the cultivation of single cell types might provide a means of investigating certain questions which are still unanswered. The chief advantage of the new hypothesis over the orthodox theory of antibody production is its power to interpret the qualitative changes in antibody which accompany prolonged immunisation. It is compatible with most of the established data and should prove stimulating to workers in the field of immunology.

A W D.

A PLACE FOR THE ASSISTANT NURSE

THE reconstruction committee of the Royal College of Nursing, under the chairmanship of Lord Horder, has come at once to the point over a fundamental question in nursing today. Should the assistant nurse become a recognised part of the nursing service? The Alness Committee, it will be remembered, in its findings for Scotland, was against giving her official status; but since then the Civil Nursing Reserve in Scotland has recognised the grade officially. The Athlone Committee considered that assistant nurses should be controlled and their position regularised; and the Horder Committee, in the first section of their report,[1] are firmly of the same opinion. Assistant nurses have been defined as women who, being neither state registered nor in training for the state register, undertake nursing for a livelihood. The committee estimate the number of assistant nurses working in Great Britain at "many thousands" even though they have deliberately left out of consideration at this stage those nurses holding the certificate of the Royal Medico-Psychological Association. It is fair to say that the nursing service of the country at the present time could not be maintained without the aid of assistant nurses, and Lord Horder, looking at things from the national rather than the sectional angle, in his foreword described their position as pivotal. The aim of all bodies interested in nursing today is to ensure a complete service, preventive and curative for everybody in the country. In such a service the assistant nurse can take a useful part, the committee believe, not only in caring for the chronic sick—in which she is already prominent—but in dental clinics, factories and other routine services, attached to private nursing cooperations, associations or nurse supply agencies, working independently or employed in hospitals and nursing-homes—always provided her work is controlled and supervised.

State-registered nurses may be forgiven if they do not at once take kindly to the suggestion that a lower grade of nurse should enter all the spheres where fully qualified women are already working. Industrial nurses have already protested in the press against the idea that an assistant nurse would be fitted to deal with acute injuries and fractures in factories. But in a large factory assistant nurses may well form a useful team working under a state-registered nurse, especially in departments (packing or sorting) where the liability to gross injury was slight. Indeed, the Ministry of Labour and National Service has recently suggested (Form 327) that, provided a fully trained nurse is in charge, additional assistance can be given by "one or more less well-qualified but suitably trained persons" Opposition to a second grade also comes from state-registered nurses in private practice who naturally suffer from unqualified competitors and who would suffer still more, presumably if these competitors were given official standing Others oppose recognition of the assistant nurse because they know little, perhaps of the valuable part she plays in the care of the chronic sick The fact remains that since the outbreak of war the demand for nurses has increased, and the sources of supply—never adequate, even in peace-time—have shrunk It has been suggested that the standard of the state examinations should be lowered so as to bring them within range of the capacity of those who are now assistant nurses, the committee are against any such drastic reduction of standards considering that the institution of simple practical tests for the assistant nurse would be a much better plan

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[1] Obtainable from the secretary, Royal College of Nursing, 1, Henrietta Street, W 1. 1s, post free 1s 2d.

Assistant nurses have come into being in a haphazard manner at present a student nurse can abandon her training to join a cooperation or agency as an assistant nurse and is then in a position to return to her own training school in that capacity at a far higher rate of salary than her colleagues True she no longer has the chance of qualifying and gaining promotion, and she will probably be limited to routine tasks and a fixed salary for the rest of her life but this may suit her ambitions and her capacity The committee recommend that assistant nurses should continue to be known as such and that they should be enrolled under the General Nursing Council Nursing then should be a closed profession practised—except for student nurses, and assistant nurses under instruction—only by state-registered nurses and enrolled assistant nurses Instruction would last two years and be preceded by a period in a preliminary training centre The first year would be spent in a hospital for the chronic sick, in the second year the assistant nurse would have experience in fever mental or tuberculosis hospitals, and would return to nurse the chronic sick while attending classes in cookery and occupational therapy The examination recommended is a simple practical oral test lasting at least an hour The qualified assistant nurse would wear a distinctive attractive and serviceable uniform, and employing authorities throughout the country would be encouraged to adopt it for those in their service The General Nursing Council would be responsible for inspecting approved centres of instruction The committee are not in favour of student and assistant nurses being taught together It is suggested that during the period of preliminary training the assistant nurse should get 10s weekly, and during the rest of her training should be paid at the rates laid down for the first and second year student nurse After enrolment she should get, in hospital, £70 yearly, rising by annual increments of £5 to £95 (that is, within £5 of the starting salary of a state-registered staff nurse) To encourage her to stay in one post long-term service should be rewarded by five-yearly increments of £5 Superannuation would be obligatory In private practice it is recommended that she should receive £2 10s a week, with board, lodging, travelling and laundry

The committee deal clearly with the misconception that the establishment of two grades of nurses would mean that the poorer patients would only get the services of the lower grade of nurse They stipulate that the patient's physical condition would decide what grade of nurse attended him Cooperative and nurse-supply agencies would be required to send to the applicant for nursing service within 24 hours, a form setting out the professional status of the nurse sent out, and the nurse herself would be required to carry a card showing whether she was on the register or on the roll of assistant nurses

Legislation would be necessary of course, to put these suggestions on the statute book, and the committee recommend measures to prevent hardship to practising assistant nurses if such an act should become law They would have to provide evidence of the justice of their claims and to apply within a year for inclusion on the roll They would have to be at least 20 years of age, and would have to show that they had had two years instruction in an approved hospital and that they were of suitable character All others would have to take the prescribed course of instruction

MEDICINE AND THE LAW

Professional Liabilities in War-time

ADDRESSING the annual meeting of the Medical Defence Union last week, Dr James Fenton the president, said that the war has not, as some have thought, diminished medical litigation And he went on to draw attention to the possible liabilities of a medical practitioner when following his profession as a member of H.M. Forces If negligence be attributed to him he must not expect the state or the military authorities to accept responsibility It is true that, if the driver of an Army lorry or a Post Office van runs over a pedestrian in circumstances resulting in a claim for damages by the injured person, the Treasury Solicitor usually steps up unobtrusively behind the defendant and undertakes the defence as well as finding the money which may be awarded as compensation The plaintiff in such cases has a somewhat nugatory legal right to sue the driver personally and no right at all to sue the Crown which is his employer What the Treasury Solicitor may do is done as an act of grace, it by no means follows that he will undertake the defence of officers of a medical unit if they are sued for damages for negligence, the view may be taken that the doctor can reasonably afford to pay for his own litigation and to satisfy claims based on allegations of want of professional skill and care Nor can the Treasury Solicitor be expected in any event to bring to the aid of a defendant doctor the same specialised skill as the lawyers who conduct litigation on behalf of the medical defence societies As the societies are assisting medical officers on charges before courts-martial as well as in the common-law courts the importance of continuing membership of a trustworthy defence organisation speaks for itself

The task of the societies indeed grows no less in war-time The doctor who remains in non-military practice may find himself short-handed and overworked, his partner may be absent on service and assistance may be difficult to obtain or inexperienced If the practitioner finds himself hard pressed and hurried, that is just the time when those careful records are omitted or those certificates are less exactly worded which involve the risk or threat of distracting and expensive proceedings A medical attendant, intent on doing his best for his patient, cannot always be taking every precaution for his potential justification in the contingency of his appearance as a defendant in court Medical practice conducted with one eye on a prospective judge and jury is by no means necessarily in the interests of the patient, and when he is hard pressed the conscientious doctor will think of his patient's safety rather than his own

SUBDURAL HÆMATOMA

ACCORDING to D Furtado there are few intracranial lesions as interesting to so many branches of medicine and surgery as subdural hæmatoma (*Amatus Lusitanus* 1942, 1, 165) The lesion may be defined as a collection of blood more or less organised, beneath and adherent to the dura mater Its evolution may be chronic or subacute, rarely acute, and its origin traumatic or spontaneous Traumatic cases comprise some 60% of the total, the trauma may have been comparatively slight, and may have been followed by a long or short latent period The non-traumatic form may complicate any acute infective illness (pneumonia scarlet fever &c) and is probably an inflammatory lesion—a form of infective hæmorrhagic pachymeningitis The symptomatology is extremely variable, but the three cardinal symptoms are headache, psychical disturbances and eventual onset of coma The headache is often localised to the area of the hæmatoma, and the skull here may be tender on percussion Psychical disturbances are observed in about 50% of the patients In making a diagnosis a ventriculogram or arteriogram may be of great service The treatment is essentially surgical analysis of the available figures showing that without operation the outlook is black, while with operation 80% of cures may be expected

In England Now

A Running Commentary by Peripatetic Correspondents

As a foundation member I have probably abused the EMS as much as anyone but I am still a member of it and have now arrived at the stage when I am prepared to admit that it has not turned out too badly But there are still features of it to which I object Why, for instance, should I have to sign an elaborate form every month, certifying this that and the other, before I receive my salary ? No private institution to my knowledge has such a low opinion of its employees, and even I hate to draw the conclusion that the standards of honesty of the civil service are such that these forms are necessary Perhaps the boot is on the other foot and it is we temporary civil servants who are under suspicion, our permanent colleagues not being quite certain whether we can ever attain to those laudable ideals which have for so long characterised a Service which by virtue, &c , &c A much less personal grouse is the timidity with which the Ministry has run the EMS Why must we have this roundabout technique of the Ministry refusing actually to run a hospital and insisting that the organisation shall be in the hands of a local authority, the Ministry keeping well in the background and surreptitiously slipping an occasional cheque into the pocket of the local authority just to cover expenses ? Is there any reason why we (i e , the EMS) should be treated as a bastard whose father means well but must be oh so careful lest its parentage be recognised ? Surely the shibboleth of "state medicine" no longer carries any fears, and would this not have been a magnificent opportunity for the Ministry to show just how well it could organise and run a hospital service (overlooking for the moment its origin on the principle that bygones should be bygones)? Or would it not have been an excellent chance to gain invaluable first-hand experience of what running a hospital service really means ?

As far as I know my standard of work, my enthusiasm for my profession, my zeal for my patients have not deteriorated since I became a "civil servant" I am not aware that I watch the clock lest I should arrive a minute before time or leave a moment after time I do not recall ever refusing a night call because I had already completed my statutory hours of work for the week It has never come to my knowledge that my patients have been deprived of any drug or preparation because the "State" considered it a luxury Granted that the nursing is not what it might be but all comparisons are invidious, especially when one has always worked in teaching hospitals, and considering the present chaotic position of the nursing profession, with its acute shortage of recruits, our nursing attains quite a reasonable standard However, I may have been lucky in my experiences I work in a London sector where the sector officer is a personal friend, and, like many of my colleagues belongs to my own teaching hospital My house-officers are old students of mine and I still retain close connexions with my old hospital The result is that while officially we may be civil servants we still work according to the old traditions

* * *

A request to have finger prints taken usually implies a clash with the forces of law and order, but it was carefully explained that it was now customary to submit a set before travelling in the Western Hemisphere In the room was a figure similar to the one mounting guard over the presents at prewar weddings, so it was fairly evident who was to take them This mountain of flesh was kind enough to say that obviously I had not undergone the experience before I wish we could meet again, because in the course of entering and leaving 29 different countries in thirteen weeks, I have since acquired considerable skill in the technique , I might even give him a few tips A curious sidelight on travel nowadays is that the better one's credentials the more solemn the formalities, whereas the wicked seem to flourish despite irregularities However, their end, when it does come, is inclined to be abrupt

The bus to the airport was quickly loaded and on its way, through the dark and often damaged streets It was obvious directly the gate control had been passed that no latitude was allowed to individual travellers On alighting our little knot was led into a small room by a sergeant of the Security Police where embarkation cards were filled up, and the customs officers and censors did their stuff Then there were interviews for personal questioning with the Security Police and emigration authorities, to whom we were submitted one at a time in a side-room , what was my profession, did I have any special branch, was my journey abroad in connexion with this, and so on All these formalities completed passengers were taken into a pleasantly furnished waiting-room with a fire and offered tea and biscuits, which were welcome, for it was nearly 9 A M and breakfast seemed a long time ago It was now possible to observe the travellers in more detail The oldest was a grey haired Canadian who was acting as one of Roosevelt's "dollar a-year" men and had repeatedly made the journey by one route or another between England and America

To anyone like myself who had never flown before, the whole set-up of the preliminary arrangements, efficient though they were, detracted from the thing itself We were led rapidly to the awaiting Douglas machine, seated inside much as if it were the village 'bus, and in fact the number and arrangement of the seats, twelve in all were similar but for the greater leg room and the soft upholstery The blacked-out windows of the plane prevented any orientation or observation apart from the altimeter on the forward bulkhead which separated the passenger accommodation from the wireless gear and control cabin A member of the ground staff warned all passengers that a descent would be made in about thirty-five minutes , with that the outside door was shut and off we went The take-off was much as anticipated but the runway was so smooth that there was not the sudden sensation of being airborne as described in the books Once the machine had settled down on her course, rather like Jemima Puddleduck the engines were noisy but this was not so trying as the vibration experienced if one leaned back too firmly in the seat Subsequent journeys in numerous planes suggested that this matter of vibration is an idiosyncrasy of certain machine much as in ships

In due course we descended at an aerodrome for fuel to take us on the hop across the sea It was a typical Service aerodrome, though a special waiting room had been set aside for civilian passengers from which the ordinary events of the day could be watched during the wait The single line of railway alongside produced one thing of interest—a tank engine which despite its army paint could not hide its Stratford origin When one thinks of the duties these Holden engines, despite their age, still do on their home tracks, it probably accounts for their popularity in a second war

At this take-off everyone felt we were now really getting down to the day's work , it was already 10 30 After about twenty minutes' flying the blackout was removed, and there we were 3000 feet up in brilliant sunshine above the clouds The clouds completely obscured any view of the sea, but from time to time in the afternoon gaps allowed us a glimpse There were no ships about or signs of life till the coast of Portugal was sighted Luncheon appeared at 1 P M , served by the radio operator It consisted of a well-made green-pea soup, cold ham with bread and green salad followed by coffee It says a lot for the steadiness of the plane that it was possible to fill the soup plates completely At last we reached Cintra airport, 27 kilometres from Lisbon, and made a good landing on an aerodrome, much churned up because there was no proper runway for heavy planes We finally came to rest alongside a German plane, a JU 58, and an Italian plane, on both of which mechanics of characteristic faces were working It seemed strange that they were still tolerated in Europe Evidently the Portuguese and other officials did not consider this sight good for us, for we were rapidly conducted into the airport building where normal customs and passport business was conducted Each company using the aerodrome had its own section of the building opening from a central waiting-hall From here passengers were called one by one to answer any questions by the passport control, who only asked me if I was married and accepted my "yes" without request for supporting evidence The country between Cintra and Lisbon reminds one of Surrey except for the white houses and the donkey carts The roads are good and the whole place has an air of prosperity not usually seen on the Continent

The stories current in England about the difficulties, and particularly the uncertainties of trans-Atlantic travel seemed gross understatements when one heard about them from actual sufferers It appears that air priorities are worth less than the paper they are written on partly through the irregularities in the service and partly through competing interests for its use The result is that men have wasted weeks of their time in Lisbon till, before the United States came into the war, they transferred in disgust to the American Export Line which kept a weekly service to New York in operation with great regularity

Having sorted out matters at the different offices we all, for different reasons paid a call at the British Embassy, my own purpose being to start arrangements for the return journey The comments in the *News Chronicle* about those in high places obtaining flights to England for butlers and women not on journeys of national importance had not passed unnoticed but in Lisbon the embassy staff is clearly not to blame for happenings outside their control My colleague M had had a room booked for him at the Hotel Aviz and kindly arranged for another one which had to be at the Hotel Berges, quite a good house about a mile distant, more in the centre of the city than Aviz My hotel was comfortable though expensive, but so is everything else in Lisbon except the taxis The drivers of these wonder how long they will remain so owing to increasing petrol shortage which has already caused private cars to be laid up three days a week In the evening M and I dined at the Aquarium Dinner there should start with fish hors-d'œuvres, which could easily be a meal in itself judging by the array of prawns, langoustines and sea snails presented to you A small steak and onions with a bottle of local red wine afterwards proved to be our measure despite the many hours that had elapsed since our aeroplane lunch What with rationing at home and austerity outside I found I had got out of the way of tackling an old-fashioned dinner Next day I talked some shop Through German influence the use of azosulphonamides locally into wounds of any kind seems to be the universal practice Portuguese medicine taken as a whole may not be of a high order but it does seem a pity that little is done to assist it from England, a country to which it looks for guidance

* * *

When Mr Churchill called Mr Aneurin Bevan "a merchant of discourtesy" rather than discourteous I take it that the PM meant that he gathered discourtesy wholesale from his friends and dispensed it retail to his enemies The real reason for much of the crude criticism of the Government, especially from the younger critics, is that the belligerency engendered by the war has found in them no other form of expression They feel they are frustrated in that many of the politicians who played no small part in losing the peace of 1918–39 are still in high office, but if their warlikeness was given some vent their attitude might be more virile and less virulent Perhaps that tardy sanity, which has recently banished the emasculated voice of the crooner from the studios, which has after 3 years of sea warfare made Service decorations open to members of the Mercantile Marine, might next time we land in France invite Mr Bevan, Mr Shinwell, and the like to go with the broadcasters and watch it, not in order to work the Uriah trick on them, but so that the psychological effect of a first-hand encounter with war might benefit them and the Mother of Parliaments

* * *

She's a billeting inspector who has to travel long distances by car on a slender ration of petrol "I ran dry yesterday afternoon," she said, "miles from anywhere, so I put an SOS on the windscreen and went to sleep I was wakened by a tall, handsome man in a car who was travelling in the opposite direction I told him of my plight so he turned his car, produced a rope and towed me to X, where I live I gave him some dinner at a pub and found I had no money, so I got the waiter to cash me a cheque I then got a bed for him at the house of a friend of mine, gave him some breakfast and off he went ' "I suppose you knew him?" I asked 'No, never saw him before in my life" "What was his name? Jack,' she replied Aren't women wonderful?

Letters to the Editor

CONSIDERATE TONSILLECTOMY

SIR —Mr Layton's ideals (July 4 p 24) regarding a close season of 3¼ months for tonsillectomy and an allowance of 20 minutes for each case of tonsillectomy would be hard to achieve in a voluntary hospital where the greatest good of the greatest number must go hand in glove with economy, both of time and of cost Consideration of the time factor in surgical cases may be all wrong and Mr Layton thinks it is, but under the present hospital system, with a limited surgical and nursing staff and a steadily increasing waiting-list, it must go on

We find it difficult to believe that Mr Watson Williams (July 18, p 83) is serious when he suggests that basal narcosis for tonsil operations in children is a luxury We assert that basal narcosis should form an essential part of the preparation for all operations on children, and in our experience its omission has frequently resulted in psychic disturbance, the worst form being an inferiority complex which may persist over years as a serious handicap

We appreciate the points made by Major Belfrage (Aug 8, p 168) In the individual case the induction of anæsthesia in bed is excellent practice, but in batches we find it better to move the patient to the anæsthetic-room or the operating-theatre for the induction and leave the sleeping patients in the ward undisturbed Major Belfrage makes out a strong case for operation on children in the evening This does not appeal to us largely because the difficulties regarding nursing and the presence of the family doctor at the operation in the evening are considerable in this area The nursing staff and the aural house-surgeons here assure us that they have not seen any degree of postanæsthetic restlessness suggesting the need for 'Nepenthe' or any other sedative, and that the patients invariably sleep well the night after the operation We do not consider that the combination of barbiturate and opium is either absolutely safe or foolproof, and for this reason we do not think that the administration of nepenthe for occasional postanæsthetic restlessness should be included as part of the routine technique

Since our paper of June 27 was written, we have had further experience of another 600 cases of basal narcosis with oral pentobarbital soluble ('Nembutal') for tonsil operations and we reaffirm its safety and the benefits that accrue to the patient and all those concerned with the patient's welfare

Royal Aberdeen Hospital
for Sick Children

JOHN GERRIE
J ROSS MACKENZIE

SICKNESS RATES FOR WOMEN

SIR,—In the special article on the report of the Committee on Amenities and Welfare Conditions in the three women's Services in your issue of Sept 19 (p 343), it is said that "As in industry the sickness rates for women in the Services are about twice as high as those for men' But this has certainly not been the experience of the Post Office which, before the war at any rate, was numerically speaking the largest industry in the country In the five years prior to the war, the average yearly sick-rate of some 35,000 to 42,000 women was never as much as two days higher than that of the men (varying from 120,000 to 135,000) and in most years it was less than a day and a half higher—i e, it was never more than 17 per cent higher Nor as a whole, even in war conditions have the sickness rates of women as compared with men ever approached such a proportion as assumed in the sentence quoted

London, E C 1

H H BASHFORD

UNSIGNED REVIEWS

SIR,—I have from time to time been encouraged to protest against the abuses of anonymity under cover of which reviews of books are often published May I take as current example the unsigned review (*Lancet*, Aug 29, p 264) of E B Ford's *Genetics for Medical Students* "The basic concepts are not explained very clearly " is a serious criticism, if true It is not substantiated by any example in the *Lancet* In a signed review of the same book in *Nature*, F W Sansome comments on the ' straightforward and clear manner " in which the author " outlines the principles " If this is a matter of personal opinion surely readers of the *Lancet* deserve to know whose opinion they are reading, so that they may judge whether the writer has one-tenth of Mr Ford's experience in university teaching

The *Lancet* reviewer complains also that human polymorphisms " are perhaps given more place than they deserve in a textbook for students " The reviewer in *Nature* thinks that " chapters on polymorphism answer many problems of the medical and sociological worker "

It is, of course too much to expect of any reviewer to appreciate all sides of a rapidly developing subject I do, however, suggest that those who write publicly over their own names do tend to limit their imputations to points which they really are in a position to substantiate Signed reviews should be encouraged, if only on the ground that the writer whose name is published does usually render better service to the public, on whose behalf he has read the book

Galton Laboratory R A FISHER

SOLDIER'S DOCTOR

SIR —Your leading article of July 1 must have been inspiring reading to the younger generation of doctors and was certainly pleasing to those who passed through the crucible of 1914–18 on active service in the field During the last war all the younger doctors, and many of the older ones, scrambled to get into one or other of the Services at the earliest possible moment Their engagements up till 1917 were only for one year and one of the duties of an ADMS of a division, or commander of a medical unit, was to persuade his officers to carry on from year to year Very few of them " chucked it " and most stayed on in the Services even in the face of heavy financial losses I have not met one who regretted his military service On the contrary one eminent specialist has insisted that his service with the RAMC " made " him Both the present presidents of the Royal Colleges served in the RAMC in the last war

May I emphasise the point you make, " Professional knowledge is not enough to make a first-class army doctor," and did not one of the greatest of physicians and teachers say that the doctor who only knew medicine did not even know that ? Very little consideration must bring home to the young doctors of today the advantage of meeting men outside their own upbringing with different aims in life, and that this is quite as valuable a training for after-life as years of hospital appointments. I am sure that experience gained in the war has left those who have had the advantage of it better doctors than they could have been without

London, E C 4 R J BLACKHAM

DEATH CERTIFICATION AND CONGENITAL SYPHILIS

SIR,—I have read with considerable interest Dr Miller's remarks on certification of death in infancy and your leading article of Sept 5 , likewise the report by Spence and Miller to which both refer It must be obvious to those who have given the matter any consideration that the death certification of infants and young children leaves much to be desired and as matters are at present it is almost valueless statistically Some years ago when discussing the incidence of congenital syphilis with the late Dr T H C Stevenson of the Registrar-General's department I expressed the opinion that the annual figures of that disease as published by the department were fallacious and valueless , for how many practitioners (outside a hospital) would certify a baby's death as being due to congenital syphilis even if they were certain of the diagnosis , in addition to which some atypical cases would be missed

Generations of practitioners have recognised or believed that miscarriages, stillbirths, and premature births were frequently the result of maternal syphilis The Newcastle report mentions that 47 infants under the age of 4 weeks, out of a total of 138 deaths at this age-period, died of prematurity alone and I believe it is highly probable that some of these were the result of maternal syphilis D P R Keizer (*Amer J Dis Child* January, 1940) found syphilis the cause of prematurity in 33 out of 858 cases (3 88%) and possibly more among 259 cases due to " unknown cause " But neither Dr Miller nor your leader so much as mentions the word syphilis, and as no mention is made of antenatal serological blood tests these presumably were not carried out The report itself devotes four and a half lines to syphilis and states that " only one case of clinical congenital syphilis occurred throughout the year and there were *no reasons to suspect other cases except one* [italics mine] in which a mother who had received treatment some years previously gave birth to a premature child which died after a few hours " Some indication of the probable connexion of syphilis with this death from prematurity should, in my opinion have been given in table x of the report (causes of death) The words I have italicised are important because syphilis may be present in a family without there being any reason to suspect it

It is, or should be, common knowledge that conceptional syphilis usually gives no indication of its existence in a woman until the birth of a dead child a premature infant or a syphilitic child, and it is only by the routine blood testing of all pregnant women that such cases can be discovered This is desirable even in peace-time, but in war-time with its inevitable increase in the incidence of venereal disease it is essential if we would do our duty to the state and to the coming generation Surely after 25 years' experience in venereal disease we are not going to repeat one of the tragedies of the last war and allow thousands of congenitally syphilitic children to be born and many of them to die annually In the seaport towns in particular it is imperative that all expectant mothers should be blood tested It may be said that there are not enough serologists left in civil practice to carry out these tests, if that is the case why should not the pathologists who are in the Services help in the matter whilst they are available in this country, and whilst other serologists are being trained? It is an urgent matter and at the moment the nation is one and indivisible

Leatherhead DAVID NABARRO

NITROUS OXIDE ANÆSTHESIA

SIR,—The very balanced viewpoint expressed in your leader " Anæsthesia for the Belly Wound " (Sept 5 p 283), and the fact that those whom you call the " not so expert " are now being called on in increasing numbers to give anæsthetics, prompts me to amplify your few remarks on nitrous oxide with oxygen This as you say, is often the first choice of the not-so-expert anæsthetist, but would, in my opinion, in many cases be better avoided in favour of open ether

Nitrous oxide with oxygen is an anæsthetic agent capable of producing unconsciousness only , it never produces any degree of muscular relaxation Its abuse for the latter purpose always implies suboxygenation, while, as you rightly point out even for the maintenance of unconsciousness suboxygenation is often difficult to avoid In this connexion some recent teaching has been unfortunate The statement, for example, that cyanosis is of no significance in the absence of respiratory obstruction would, I think, be impossible to justify on physiological grounds Many writers have confused the issue by placing undue emphasis on the fact that in cases of plethora cyanosis does not imply anoxæmia, for such cases are rarely seen in the theatre Because patients with polycythæmia are cyanosed in the presence of adequate oxygen, one certainly cannot conclude that cyanosis in other conditions may be disregarded as a sign of oxygen lack The emphasis should rather be placed on the fact that most patients are either anæmic before they come to operation, or become so during its course Such patients may be anoxæmic without showing cyanosis , the more so the greater the degree of their anæmia

In the absence of cyanosis, the recognition of anoxia, especially in its minor degrees, is very subtle Of the signs usually described, alteration in respiratory rate or rhythm is often obscured by premedication while lowered blood-pressure, reduced pulse-pressure and increased pulse-rate are late signs In the light of present knowledge it seems wise to regard all cyanosis (except where the hæmoglobin level is known to be raised) as positive evidence of anoxæmia, while in cases where this level is lowered the only way to avoid anoxia is to increase the oxygen percentage in the mixture *above* the minimum level necessary to keep the patient pink This technique may ften necessitate a supplementary agent to enhance the ffect of the nitrous oxide, and in my opinion the use of uch a supplementary agent is more often evidence of kill on the part of the anæsthetist than of the lack of it Of such agents, ether is in many cases, and especially or the not-so-expert the safest simplest and best If skilfully administered this does not necessarily imply, as many American writers assert, that the gases are used merely to volatilise ether or that the ether becomes the main anæsthetic agent of the mixture Even were this the case, which I doubt the changes produced in tissue cells by anæsthetics skilfully administered are almost certainly reversible Those produced by anoxia, even of minor degrees and especially if prolonged, are as certainly not reversible Expertness of administration, since it cannot mitigate the effects of anoxia shows itself in its recognition and avoidance Thus, the statement that nitrous oxide with oxygen is the safest anæsthetic agent is subject to considerable qualification

Goodmayes, Essex R BLAIR GOULD

VITAMIN C IN PERNICIOUS ANÆMIA

SIR,—I believe the following case-summary supports the view of Dyke Della Vida and Delikat (*Lancet*, Sept 5, p 278) regarding a vitamin-C deficiency in irresponsive pernicious anæmia

A single woman, aged 60, was found to have a severe macrocytic anæmia in March, 1942 On March 24 red cells 2,500,000, hæmoglobin 52%, anisocytosis, poikilocytosis and large macrocytes In spite of massive doses of liver intramuscularly, the reticulocyte response remained very poor, the blood showed little improvement at first, and deterioration later On April 27 the red cell count was 3,200,000 per c mm and hæmoglobin 70% but by May 13 these had fallen to 2,100,000 and 45% It was then suspected that the patient had a carcinoma of the stomach and a hopeless prognosis was envisaged From June 15, 150 mg of vitamin C, in the form of 'Redoxon,' was given daily, the liver injections being continued A clinical response was rapidly apparent, and the blood-picture began to improve after five weeks On July 31 red cells 3,800,000 per c mm and hæmoglobin 52% On Sept 14 red cells 3,900,000 and hæmoglobin 74% The red cells showed no poikilocytosis but distinct anisocytosis and some polychromasia The treatment has been continued and the improvement has been maintained The patient is now ambulant and is gaining weight

My single case did not permit of any valuable inference, but in the light of the three cases now reported in your columns, it seems that vitamin-C estimations in intractable cases of pernicious anæmia may throw further light on this condition and provide a promising line of therapy

London, N W 8 S C LEWSEN

HEN WLAD FY NHADAU

SIR,—Your peripatetic correspondents are always delightful, but none has given me greater pleasure than he who recently has been "standing" in the Market Place at Portmadoc Had not his companion pushed him into his car, indubitably he would have become possessed of a packet of inferior razor blades at an exorbitant price, I recognise this seedy looking individual as an old and amazingly successful importunate friend I assure your correspondent that the Welsh are not a sickly race—kindly and sensitive to suffering in their small community living in this wild land of narrow valleys and knotted hills, but, please, not a sickly race Incidentally, I wonder if one listened to two Englishmen talking Welsh what the conversation would be about Very improbably would it be about the historic occasion centuries ago when not so far away from Portmadoc the Welsh swore fealty to the English, since when none have been more loyal than they, remaining true to the defence of their country and liberty "For these they fight for these they undergo hardships, and for these they willingly sacrifice their lives They deem it a disgrace to die in bed, and an honour to die on the field of battle' Your correspondent will recognise this quotation from the writings of Giraldus Cambriensis, and will I am sure subscribe to them when next he stands (and thinks) in the Market Square at Portmadoc I wish it had been his experience not only to stand, but to see the loveliest view to the peak of Snowdon, and also to hear the music across the bay of the marching men of Harlech which will continue to sustain the valour of the proud people to which I have the honour to belong

EXILED

MD CANTUAR

SIR,—With reference to your note on the Lambeth degrees in the annual Students Number (p 267), I beg to point out that the fourth and last such degree in medicine since the Medical Act of 1858 was granted to James Rogers of Swansea in 1880 Dr Cecil Wall gave a full account of the various recipients of Lambeth MDs and MBs seven years ago (*Brit med J* 1935, ii, 854) An interesting point is the fact that by the letter of the act of 1534, the archbishop is only empowered to grant such degrees as were in use at that date and, as the faculty of surgery is of recent development, it appears that he may not create masters and bachelors of surgery, while being competent to grant the MD and MB With regard to the use of the title it would be perfectly legal for one who is already on the Medical Register to make use of his title if granted a Lambeth degree, even Bye-law CLXVI of the College of Physicians only prohibits its diplomates from assuming the title of MD if they have not obtained a degree—it does not mention whether the MD comes from a university or not

This correspondence draws attention to one serious need in our system of postgraduate facilities, since the Durham (Practitioners) MD was abolished in 1932 no way has been left open for the non-graduate practitioner to obtain a medical degree It was to meet the need of deserving non-graduates in times gone by that the archbishops used their prerogative, and anybody who examines the list of Lambeth MDs will see that they used it wisely and well

Canterbury R R PREWER

LIAISON

SIR,—When in doubt consult the *Oxford English Dictionary*—so I did so The result was something of a shock Liaison means (*a*) a thickening for sauces, (*b*) a close connexion, (*c*) an illicit intimacy (*d*) the joining of a final consonant to a following word commencing with a vowel, and, at last, (*e*) combination and cooperation of allied forces or arms of the same force As a medical officer in the Home Guard I have been constantly exhorted for eighteen months past to liaise (a new verb for the *OED*) with civil authorities and the RAMC This has made me study the conditions necessary for "combination" and "cooperation" Curiously enough most of these conditions are provokingly absent The first condition is that one should know something about the other man's job This can best be found out by asking him It is therefore disconcerting to meet with the reply that there is no order in the civil defence services touching the matter of liaison with the Home Guard, and that pending the arrival of such order nothing can be done about it There are indeed many officers of the civil and municipal services who are prepared to go ahead without waiting for an order but there are still far too many whose attitude is otherwise Another way of learning about the civil defence services is by listening to lectures about them Such lectures are occasionally available, but they are not enlightening for the very good reason that the speakers do not know the job of their Home Guard audiences and are therefore unable to visualise the points most important to them And when some important (to us) question is asked—for example, what is the equipment of an up-graded point—the speaker is found to have no knowledge of the proper answer The obvious remedy is that pre-liaison education should involve addresses by Home Guard medical officers to the heads of local civil defence services I once managed to get permission to give such an address Afterwards, my audience freely admitted that they had had no idea of the possibilities of invasion or of the combined responsibility of the HG and CDS in case of attack Much the same is true of the RAMC One seldom meets with unwillingness to liaise but almost always with a startling ignorance of the size of the HG and of its medical side I have attended three or four official disquisitions upon the organisation of the RAMC (with which most of the HG audience was already pretty well acquainted), but only once have I heard of the RAMC being addressed by a HG medical officer These difficulties might easily be removed, but the initiative would have to come from above, very far above such humble persons as HGMO's

There is another difficulty Not long since I attended a Conference (so important as to deserve the capital letter) at which the highest officers of the HG, the RAMC *and the CDS attended We sat round a table for a long* time Then we had tea and buns made with white flour (prewar stock belike) Then we did some more talking and finally the Chairman, a much decorated officer of the AMS, announced the result, which was that we had demonstrated that the machinery for liaison had been carefully laid down in orders and that there was therefore no more to be said about it The machinery in question amounted to no more than an order that everyone should liaise with everyone else, and, being an Army order, it had not reached the civil authorities and even if it had would in no wise have been binding on them

A matter has arisen which seems to make liaison even more necessary than hitherto *Both the CD* Services and the Red Cross have been exhorted—in a somewhat casual and indefinite manner—to do what the HG has long been doing, namely, to set up minor casualty collecting posts at which the wounded can be retained for a while pending the arrival of ambulances It is apprehended that this arrival may be much delayed in the areas affected by invasion. Surely a combined committee of the three services involved is essential if there is not to be confusion, overlapping and waste of personnel and material But in practice it is almost impossible even to discover what either of the other services is doing about it It is harder still to get any message through to those higher authorities with whom lies the power to compel combination and cooperation So, if invasion comes, our wounded must await any happy chance that utter confusion may vouchsafe them Let no-one believe that this is too harsh a picture In emergency all will no doubt do their best for the wounded , but this is not enough It is within our power as a nation to build up, especially in areas where invasion is most likely, so complete, all-embracing and coordinated a service that all wounded may know beforehand where help can be had, even if all ambulances must be off the roads, even if, as is certain, what ambulances there are prove wholly inadequate for the purpose But for this *purpose effectual liaison is essential now, not a mere* liaison on paper but actual cooperation not less perfect than it has been made, for example, in the fire services And it is for the highest authorities to take this problem in hand The facile excuse that casualties and suffering are inevitable in war will never satisfy HG officers, whose men are their friends and neighbours for whom they feel something more than merely official responsibility

Z M A

MODEL WOUNDS IN FIRST-AID TEACHING

SIR,—I have found model wounds made with 'Plasticine' a useful aid in my course of lectures on first-aid I had considerable experience in dressing injuries of all kinds during the air-raids in this neighbourhood and had the idea of recording them by this method I first had the idea from seeing wax cameos made by Madame Tussaud's father, a French surgeon The principal injuries were caused by broken glass, which inflicted terrible cuts We also had to deal with incised wounds, gashes from flying *stones and shrapnel, wounds with glass* and odd fragments of metal still embedded deeply in them, and of course fractures of all kinds, both simple and compound Having passed through first-aid classes we knew something of how to deal with these cases and prepare them for evacuation to hospital After the raid I noted down the chief injuries and *then as* soon as possible made models in the following manner

I prepared a background of calico smeared with thin plasticine on which I built up the wound with a "worm" of plasticine moulded in the shape of the injury and smoothed down on the outside by my thumb Into the cavity thus formed I inserted broken ends of chicken and other bones according to the size of the real bones that had been fractured I also inserted bits of glass, odd nails and bits of metal to represent other injuries with which we had to deal When the plasticine was set I painted the whole model with bright red paint for arterial hæmorrhage and dark red, almost purple, for venous The calico backing was also painted to match The bones were painted bright red or dull red and the effect was most realistic

When I gave my lectures I had friends to act as patients who were carried into the hall on *stretchers* or limped in if able to walk I had previously fastened the "wounds" on their arms, legs, head, &c by adhesive tape and painted the whole with cochineal To add to the general effect I painted trickles of blood from the nostrils in the case of head injuries and long streams and smears of blood down the face and on the limbs Perhaps my best effort was a "patient" whose abdomen had been ripped open by a bomb This terrible injury was represented by lengths of rubber tubing, painted with cochineal and red paint of various shades, and fastened on with adhesive tape, with the body painted with cochineal She came in screaming and I can assure you the effect was terrific One woman almost fainted when I asked her to attend to this patient, and no wonder *She really looked* awful

Glass gave great trouble and most of my class wanted to pull out the pieces This I had to prevent as it might have cut an artery My "patients" acted their parts with great realism and fully entered into the idea If the class tried to dress their injuries without first of all making them sit down they invariably fainted, and then it was discovered that *a simple fracture* had developed into a compound fracture

I found it essential to rehearse the patients beforehand and coach them in their parts in accordance with their injuries It is far more realistic when "patients" scream and cry when brought in to be dressed, or vary the performance by "fainting"

I shall be happy to show my model injuries to any readers who care to see them

29, Carlisle Mansions, Carlisle
Place S W 1

H E CROCKER

Public Health

From the Annual Reports

RESTRICTIONS on the publication of population figures make rates and numbers in the annual reports for 1941 meaningless, and enforced brevity has shorn accounts *of unusual episodes of most of their value The* reports are thus no more than mark-time statements to ensure continuity of local public-health histories and ill repay the time, effort and material spent on them

Dr Henry Whitehead gives a table of the chief vital statistics of *Wigan* in decennia from 1876 which shows the dramatic changes which have occurred from the years of highest to those of lowest birth-rates In 1876 the birth-rate of Wigan was 48 9, in 1936 it was 17 2 This reduction of nearly two-thirds was regular, but since 1936 the rate has fluctuated with no special trend in either direction The death-rate *fell from 28 5 to* 12 8, since 1936 it has fluctuated with a trend towards increase People born in the seventies are now dying out in the course of nature, but though the birth-rate fell rapidly in each decade from 1870 to 1930, the actual number of births increased, and the death-rates of the future are governed not by the birth-rates but by the actual numbers born a lifespan before There will be no dramatic rise in the death-rate corresponding to the *dramatic fall in the birth-rate during the past* seventy years Neither the zymotic death-rate nor the infantile mortality showed much change before this century The zymotic death-rate was 4 9 in 1876 and 4 1 in 1896, but by 1936 it had fallen to 0 42 and it has fallen further since Roughly in the last quarter of the nineteenth century the zymotic group *killed 5 per 1000 population* annually, it now kills less than 5 per 10,000 This means a saving of 180,000 good young lives annually Infantile mortality was 186 in 1876 and in 1896, but by 1936 it had fallen to 82 The tendency of this rate in the present decade is to vary sharply from year to year, but on the whole the trend is about level Though birth-rates and death-rates are but indirectly influenced by medical science—for all of us are born and all will die—*zymotic death-rate* and infantile mortality are directly, though not exclusively, under medical control In theory we could reduce both to zero , we are getting near to this with the zymotic infections, and we are making headway towards it in infantile mortality

Dr J A Charles of *Newcastle-on-Tyne* compares the statistics of 1914–16 with those of 1939–40 In the early years of the last war the annual averages were birth-rate 27 2, births 7443, death-rate 16 8, deaths 4619, infant mortality 131, infant deaths 978, pulmonary tuberculosis mortality 1·32 and deaths from cancer 267 In 1939–40 the corresponding rates and numbers were birth-rate 16 7, births 4583, death-rate 13 8, deaths 3697, infant mortality 63, infant deaths 287, pulmonary tuberculosis mortality 0 90 and deaths from cancer 466 Notifications of enteric fever numbered 202 in the first two years of the last war, but only 15 in 1939–40

Infectious Disease in England and Wales

WEEK ENDED SEPT 12

Notifications —The following cases of infectious disease were notified during the week smallpox 0, scarlet fever, 1618, whooping-cough, 1074, diphtheria, 855, paratyphoid, 7, typhoid, 30, measles (excluding rubella), 2644, pneumonia (primary or influenzal) 319, puerperal pyrexia, 125, cerebrospinal fever, 62, poliomyelitis, 20, polio-encephalitis, 2, encephalitis lethargica, 1, dysentery, 146, ophthalamia neonatorum, 76 No case of cholera, plague or typhus fever was notified during the week

Deaths —In 126 great towns there were no deaths from scarlet fever, 1 (0) from an enteric fever, 1 (0) from measles, 3 (1) from whooping-cough, 17 (0) from diphtheria, 73 (6) from diarrhœa and enteritis under two years, and 3 (0) from influenza The figures in parentheses are those for London itself

West Hartlepool reported the fatal case of enteric fever Liverpool and Birmingham each had 6 deaths from diarrhœa

The number of stillbirths notified during the week was 226 (corresponding to a rate of 37 per thousand total births), including 17 in London

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Obituary

DAVID WATERSTON

M D EDIN, F R C S E, F R S E

Professor Waterston, who died in an Edinburgh nursing-home on Sept 4, in his seventy-second year, following a persistent pneumococcal infection, was an anatomist and anthropologist who made excursions into physiology He was of the Edinburgh school and all his life retained the hallmark of his association with his chief, Sir William Turner He qualified in 1895 and after twelve years as demonstrator at Edinburgh University was called to the chair of anatomy at King's College, London, in 1909 When five years later he succeeded the late James Musgrove, in the Bute chair, at St Andrews, it was a home-coming for him, for his father had been a minister in Dundee, and he was quickly accepted both by town and gown For six years Waterston represented the senatus on the university court and from 1930–40 the university on the GMC He was lately coopted a member of the town council He had been associated with Sir James Mackenzie in the foundation of the Institute of Clinical Medicine, and it was here that he carried out his investigations into cutaneous pain (*Lancet*, 1933, i, 943), and made the examination of Mackenzie's heart for which he had left instruction

The department of anatomy, founded by Musgrove, although never large in numbers, was developed by Waterston into an excellent school He was a brilliant teacher and knew how to illustrate his lectures with the neatness and skill shown to great effect in *The Anatomy in the Living Model* (1931) He also edited the *Edinburgh Stereoscopic Atlas of Anatomy* Outside medicine his interests were mostly anthropological A collection of his arrow-head flints is in the Bell-Pettigrew museum, and when St Salvator's College Chapel was being renovated he examined the skeleton of Bishop Kennedy and reported on his findings to the Royal Society of Edinburgh

In 1907 Waterston married Isabel Amv Simson, and they had three sons Two are serving with the RAMC, the eldest in India and the second in the Middle East

JOHN MacMILLAN

M B ABERD, MAJOR R A M C

John MacMillan was a delicate boy who early set his heart on becoming a doctor though his friends at the Aberdeen Grammar School sometimes wondered whether his physique would allow him to do so, and indeed throughout his student days he had to contend with recurrent attacks of illness But though outwardly shy and diffident he was resolute of purpose and he graduated in 1936 He held resident posts at Walsall and Kettering general hospitals and spent eighteen months in general practice, but he had chosen public-health work as his career and shortly before the outbreak of war he was appointed ARP assistant MO for Southgate He was combining this job with a course for the DPH, but when war broke out as member of the Territorial Army he was called up at once and sent to the Middle East at the beginning of 1940 He served in Palestine, Iraq and Syria and was mentioned in dispatches in April, 1941 He died on active service last July and leaves a widow who is also a graduate of Aberdeen

ALWYNE THEODORE COMPTON

F R C S

Mr A T Compton, who died on Sept 9 at the age of 68, had been connected with the German Hospital in Dalston for 30 years He retired to Seaton in 1938, but after the outbreak of the war he returned to the hospital where almost immediately he had a cerebral hæmorrhage with left hemiplegia, from which he did not perfectly recover Compton qualified from St Bart's in 1901 taking the surgical fellowship in the following year and later lecturing on anatomy at King's College His *Essentials of Surgery* was a textbook in brief with a sound basis of surgical anatomy and pathology Patients at the hospital will miss him for he was always kind to them His case-notes mostly contained illuminating drawings From his father, a well-known landscape painter, he doubtless derived not only his skill as a draughtsman, but also his love of walking and Alpine climbing

DONALD SEYMOUR SCOTT

M B CAMB, M R C P; LIEUTENANT R A M C

Donald Scott, known to his friends as "Popa," was educated at Felsted School, where he was head of Follyfield House when he left in 1929 He went up to Emmanuel College, Cambridge, where he was a member of the OTC, played hockey for the Wanderers, and became an enthusiastic yachtsman He qualified from the London Hospital in 1935, and took his degree two years later A friend remembers him as one of the most contented and happy of men (seldom seen without a pipe), and he knew how to communicate his happiness to others After holding house-appointments at the London Scott was appointed RMO at the Royal Masonic Hospital in 1938, and following some months in general practice he took the MRCP When war broke out he joined up at once and was posted to a field ambulance under orders for overseas, and he was sent to France with his unit in January, 1940 In May of that year, while attending casualties in a forward dressing station, he was seriously wounded by an exploding shell He was taken to a French hospital at Zudvcote, and it has now been officially presumed that he died there of his injuries, although no definite information has been obtained He was 29 years of age

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ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW —The honorary fellowship of the faculty has been conferred on Mr Geoffrey Jefferson, professor of neurosurgery in the University of Manchester

Lectures on Dermatology

The following lectures on common skin diseases are to be held at the London School of Dermatology, 5, Lisle Street, W C 2, at 4 30 P M on Tuesdays and Thursdays Sept 29, Dr Henry Corsi, scabies and parasitic infections, Oct 1, Dr William Griffith, bullous eruptions, Oct 6, Dr R T Brain, ringworm infections, Oct 8, Dr J E M Wigley, general principles of treatment, Oct 13, Dr A D Porter, eczema, and Oct 20, Dr Geoffrey Duckworth, seborrhœic dermatitis and psoriasis

The lectures are free and open to medical officers of all the Allied Forces, postgraduates and undergraduates

London County Council

For the duration of the war St Peter's Hospital, Whitechapel, and St Luke's Hospital, Chelsea, have been transferred from group I of the council's hospitals, which receive the acute sick, to group II which receive the chronic sick

Hospitals in the North-east

By arrangement with the Minister of Health, the Nuffield Provincial Hospitals Trust has appointed Prof J A Ryle, FRCP and Dr A E Quine, FRCS, to carry out a survey of hospital services in the north east of England (Northumberland, Durham and Cleveland) This survey will be conducted on the same lines as the surveys now being carried out by officers appointed by the Minister of Health in the London area and in the north west This is part of an arrangement under which the Nuffield Trust, with the concurrence of the County Councils Association, the Association of Municipal Corporations and the British Hospitals Association, has undertaken to assist the ministry by organising surveys of hospital services in various parts of the country The areas to be surveyed and the officers to be appointed will be agreed between the minister and the trust

Registrar for Forty Years

Mr Robert Brough, registrar of the general council of the University of Glasgow and acting secretary of the university court, retired at the end of July after almost forty years' service The council are organising a testimonial to him which many Glasgow graduates will wish to join Subscriptions—which are limited to 5*s*—should be sent to the clerk of the council at 82, West Regent Street, Glasgow, C 2

Chiropodists Wanted for ATS

The care of the feet is an important part of the medical services of the ATS, and foot complaints sometimes occur within the first few weeks of enrolment, probably because most women entering the service have been used to wearing high heeled light weight shoes These women show symptoms of metatarsalgia, early foot strain, tendo Achillis bursitis and so forth, and an appeal is now being made to women chiropodists up to the age of 43 (50 for ex Service women) to enrol in the ATS They will be sent to a basic training centre for one month, and afterwards posted, with the rank of corporal, to ATS groups or training centres They will be paid at the rate of 4*s* 6*d* a day—the highest trade rate for an ATS corporal On being posted to a company, in view of the specialised nature of their work, they will not be expected to undertake some of the more arduous duties which fall to the lot of an NCO All chiropodists work under the direction of a medical officer, and cases which do not respond to treatment are referred to an orthopædic surgeon in a hospital It is intended to have a corporal chiropodist for every 600 auxiliaries Some of them will be stationed in training centres and mixed batteries, others will travel from one company to another in order that regular inspections may be given

Nursing Policy in West Africa

Mr Harold Macmillan, under secretary for the Colonies, replying to a question in the House of Commons stated the declared policy of the Government that there should be no discrimination on the ground of colour in filling appointments in West Africa The Secretary of State attaches importance to the increased employment of colonial men and women in their own countries provided that they are suitably qualified not only by professional attainment but also by personality and character To ensure that these requirements are met, candidates for the Colonial Nursing Service, whatever their origin, are interviewed by the Overseas Nursing Association on behalf of the Secretary of State, and appointed or rejected on its report In order that the present satisfactory status of that Service may be maintained, it is of importance that there should be no lowering of the standards which have been applied in the past and they must be applied to all races without discrimination, even though this may seem to bear hardly on candidates who may not have enjoyed the same educational or cultural advantages as others, but it is to be remembered that candidates selected for the Colonial Nursing Service are often required to carry out, even in their first year of service, duties in regard to hospital supervision and training of subordinate staff which here would only be expected of matrons or sister tutors with long nursing experience Consideration is being given in the formulation of postwar plans to schemes providing Government assistance for sending selected girls to this country to train as nurses, but the number who can thus be accommodated is limited by the number of vacancies which can be made available in teaching hospitals for overseas candidates While this scholarship scheme may help, it cannot possibly provide nurses on the scale requisite for the proper staffing of colonial hospitals and health departments, and it is essential to arrange for training facilities as nurses for girls in their own countries and to supply sister tutors trained in the teaching methods and discipline common to hospitals here After qualification colonial nurses who had been specially selected for ability and character, could then be brought to this country for special courses, and plans are in hand for improving after the war the facilities for providing such courses

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Births, Marriages and Deaths

BIRTHS

DUFFY —On Sept 12 at Stourport on Severn, the wife of Captain C A Gavan Duffy, RAMC—a son

FRESHMAN —On Sept 15 at Wingham, Nr Canterbury, the wife of Edgar Freshman FRCS—a daughter

HEWITT —On Sept 14 at Radlett, Herts, the wife of Major E J C Hewitt, RAMC—a daughter

LACK —On Sept 11, at West Cross, Swansea, the wife of Captain Christofer Lack, RAMC—a daughter

PARISH —On Sept 14, at Southborough, the wife of Dr T N Parish—a son

SQUIRE —On Sept 15, in London, the wife of Dr Christopher Squire—a son

TOWNSLEY —On Sept 13, at Norwich, the wife of Norman Townsley, FRCS—a daughter

WAYMOUTH —On Sept 14, at Harrow on the Hill, the wife of Captain Arthur Waymouth, RAMC—a daughter

MARRIAGES

ADAM—FORSYTH —On Sept 19 in Edinburgh Patrick Alan Adam, surgeon lieutenant RNVR, to Isabel Jean Forsyth

GRANGER—ELLIS —On Sept 12, at Kimbolton, Allan Frederic Granger, captain RAMC, to Phyllis Mary Ellis

GREGG—WILKINSON —On Sept 12, in London, Duncan McCallum Gregg to Audrey Ann Wilkinson

HAY—OLIVER —On Sept 11, at Newcastle on Tyne, Rankin Kilgour Hay, MB, to Winifred Oliver, SRN

HORTON—JENKINS —On Sept 14 at Belmont, John Anthony Guy Horton, MB, to Margaret Jenkins

DEATHS

BRIERLEY —On Sept 11, at Kitamaiyu, Ruiru, Kenya Colony, Wilfred Edward Brierley, MB MANC and LEEDS, FRCS, lieut colonel IMS (retd)

CHATER —On Sept 17, at Petersfield Harold John Chater, MRC, surgeon rear admiral RN (retd), aged 68

COTES PREEDY —On Sept 16, at Gerrards Cross, Digby Cote Preedy, LSA, KC

GELL —On Sept 14, at Church Aston Manor, Henry Willingham Gell, OBE, BM OXFD aged 85

GRIMMER —On Sept 16 George Kerr Grimmer, BA NEW BRUNSWICK, MD EDIN, FRCSE of Trinity Crescent London, S W 12, aged 76

LLOYD JONES —On Sept 16, Ernest Lloyd Jones, MD CAMB, formerly of Cambridge, aged 79

MOODY —On or about Sept 11, at Umvuma Southern Rhodesia, John Evelyn Moody LMSSA formerly of Scarborough, aged 61

PHILLIPS —On Sept 11, at Farringdon, Hants, Alfred Stanbury Phillips, MRCS formerly of Bedford

PLUMPTRE —On Sept 14, at Cheltenham Cyril Macdonald Plumptre, FRCSE, FRCOG lieut colonel IMS (retd) of Wendover

RENDEL —On Sept 13, at Godalming, Frances Elinor Rendel, MB LOND

WRIGHT —On Sept 9, at Liverpool, Hedley Duncan Wright, BA TASMANIA, MD, DSC EDIN MRCPE, professor of bacteriology in the University of Liverpool

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The Index and title-page to THE LANCET, Vol I, 1942, which was completed with the issue of June 27, will be ready shortly A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager, 7, Adam Street, Adelphi, W C 2 Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now

LID-RETRACTION IN TOXIC DIFFUSE GOITRE

K C EDEN, M S LOND, F R C S
SURGICAL REGISTRAR

W R TROTTER, D M OXFD, M R C P
ASSISTANT TO THE MEDICAL UNIT

UNIVERSITY COLLEGE HOSPITAL

(From the hospital clinic for the study of thyroid disease)

APPARENT protrusion of the eyes is a characteristic eature of toxic diffuse goitre (primary thyrotoxicosis, Graves's, Parry's or Basedow's disease), but in a large proportion of such cases the protrusion is illusory, the ppearance being caused by retraction of the upper lid This phenomenon of lid-retraction has long been decribed as Dalrymple's sign, but until recently has often been confused with exophthalmos For this reason the elation of lid-retraction, as distinct from exophthalmos, o the different factors operative in thyrotoxicosis has eceived scant attention in published work It is our purpose to sketch the outline of this relationship

Recent interest in the eye signs of thyrotoxicosis has argely been focused on two striking forms of exophthalmos the clinical syndrome of exophthalmic ophthalmoplegia and the experimentally produced exophthalmos which follows the injection of anterior pituitary extracts In the production of both these conditions (which seem to be closely analogous) thyroid toxæmia plays little part On the other hand, the evidence presented in this paper suggests that in the production of lid-retraction thyroid toxæmia is an important factor It is plainly not the only factor, however, and the conclusion we have come to is that while exophthalmos occurring in toxic diffuse goitre is extrathyroid in origin, lid-retraction is controlled not only by an extra-thyroid factor but also as a rule by thyroid activity

In the recognition of lid-retraction we have made use of Pochin's (1938, 1939) simple and lucid account of the physical signs The distinction between exophthalmos and lid-retraction can readily be made by observing the eyes when they are directed horizontally forward If a band of white sclera can be seen above the iris lid-retraction is present (fig 1*a*), if sclera is visible below the iris this denotes exophthalmos (fig 1*c*) Since the upper lids normally rest some 1–3 mm below the limbus, lid-retraction may be said to be present if the lid margins rest at or above the upper edge of the iris In the case of exophthalmos no such precise statement can be made, for the range of normal variation is wide, consequently we have accepted only the gross cases, in which the lower lids are 2 mm or more below the lower border of the iris, as examples of true exophthalmos When lid-retraction and exophthalmos coexist, sclera is visible above and below the iris (fig 1*b*)

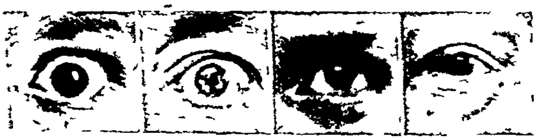

Fig 1—Eye signs in toxic diffuse goitre *a* lid retraction, *b* lid-retraction with exophthalmos *c* exophthalmos, *d* puffy swelling of the lids

The actual recognition of lid-retraction is thus a simple matter, but it can exist in two forms, constant and spasmodic In only the constant form is the relationship to thyroid disease at all clear, and the two have therefore to be carefully distinguished The act of staring is essentially a momentary retraction of the upper lids by the levator palpebræ superioris muscles, and differs only from the lid-retraction of thyrotoxicosis in that it is a transient voluntary action For this reason it is important to eliminate any element of staring when eliciting lid-retraction, and this is perhaps best achieved by asking the patient to look at a distant object In some people even without staring the upper lids may from time to time retract above the eyeball in an irregular and spasmodic manner Though this spasmodic lid-retraction is probably more common in thyrotoxic subjects and is sometimes superimposed on true lid-retraction, it is too common in normal people to be of any diagnostic significance The lid-retraction which is so prominent a feature of toxic diffuse goitre is essentially constant in character, at no time do the upper lids fall below the limbus when the eyes are in the standard position

Apart from thyroid disease, lid-retraction is found occasionally in severe myopia, in lesions of the posterior commissure of the brain (due to encephalitis, disseminated sclerosis, cerebral tumours, &c) and as a congenital defect In all these connexions it is rare In thyrotoxicosis lid-retraction is common, but as a rule is found only in association with toxic diffuse goitre Thus in a series of 254 cases of goitre under observation there were 74 with lid-retraction, 72 of which were cases of toxic diffuse goitre the other 2 being examples of toxic nodular goitre (table I)

TABLE I—RELATIVE INCIDENCE OF LID RETRACTION AND EXOPHTHALMOS IN 254 CASES OF GOITRE

—	Total cases	With lid retraction	With exophthalmos	With exophthalmos or swelling of the lids (concealed exophthalmos)
Toxic diffuse goitre	134	72 (54 %)	36 (27 %)	56 (42 %)
Non toxic diffuse goitre	21	0	0	0
Nodular goitre (toxic and non toxic)	99	2	0	0

It will be seen that lid-retraction occurred in more than half the cases of toxic diffuse goitre, it was a more characteristic feature, in fact, than exophthalmos Only 19 of these 72 cases of toxic diffuse goitre with lid-retraction were associated with exophthalmos as estimated by the position of the lid margin, but there were a further 20 cases with puffy swelling of lids (fig 1*d*), which in our opinion should properly be regarded as concealed exophthalmos[1] Thus it may be said that over half the cases of lid-retraction in toxic diffuse goitre were associated with exophthalmos in a manifest or concealed form

The cases have been further analysed according to age, sex, and duration and severity of the disease, but the results showed no statistically significant correlations so we have not recorded them here Our figures showed a tendency for the incidence of lid-retraction to increase with the severity of the disease, whether this was assessed clinically or by the basal metabolic rate The figures are, however, too small to carry any conviction

RELATION TO THYROID TOXÆMIA

We have evidence of two kinds to demonstrate the relation of lid-retraction to thyroid toxæmia These consist of observations of the effect on lid-retraction, first of treating the disease, and secondly of giving thyroid extract

Effect of treatment—A group of 12 cases of toxic diffuse goitre with lid-retraction was observed for periods ranging from 2 to 24 months without treatment, during which time the disease remained active In all cases the lid-retraction persisted throughout the period of observation, while in 2 it increased In cases treated either by thyroidectomy or conservatively, on the other hand, with improvement of the general condition the lid-retraction tended to clear up (fig 2) Table II summarises the combined findings in 55 cases with lid-retraction treated surgically (all of which improved), 4 cases which improved spontaneously, and the 12 cases, referred to above, in which the disease remained active It is clear that

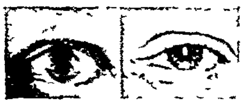

Fig 2—Abolition of lid retraction by thyroidectomy *a* before operation showing lid retraction without exophthalmos *b* after operation showing complete absence of lid retraction Note that the position of the lower lid relative to the iris is unaltered

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[1] The loose puffy swelling which occurs in the upper lids and along the supraorbital ridges is known as Enroth s sign (fig 1*d*) Occasionally there is also a baggy swelling of the lower lids Both these changes are probably due to accumulation of œdematous subcutaneous fat resembling the fat found in the orbit in clinical and experimental exophthalmos It is logical, therefore, to regard Enroth s sign as denoting concealed exophthalmos

TABLE II—EFFECTS ON LID RETRACTION OF TREATING OF THE TOXIC GOITRE IN 71 CASES

Result of treatment of toxic goitre	Cases	Lid retraction			Increased
		Disappeared	Decreased	Unchanged	
Good	38	29	4	4	1
Fair	21	11	6	4	0
No improvement	12	0	0	10	2

The result was counted good if the patient was left without residual signs of thyrotoxicosis (eye signs excepted) and a resting pulse rate of 80 per min or less, fair result was any improvement falling short of this Duration of observation ranged from 2 to 26 months after operation

in most cases the presence of lid-retraction depends on activity of the thyrotoxicosis Fig 3 shows that in most cases the lid-retraction disappeared rapidly as the disease became quiescent, but it is noteworthy that in a few cases there was a lag of many months between the disappearance of the thyrotoxic signs and that of the lid-retraction We found no evidence to suggest that this persistence of lid-retraction was related to the length of time it had been present

Effect of thyroid extract—In one case the correlation between the administration of thyroid extract and the presence of lid-retraction has been remarkably precise

CASE 1—A woman of 50 gave a 2 year history of chronic ill health with loss of weight She showed all the main features of toxic diffuse goitre, the pulse rate being 80–100 and the BMR + 63%, + 47%, + 42% There was bilateral lid retraction, both upper lids lying 1 mm above the limbus, but no exophthalmos Subtotal thyroidectomy was followed by abolition of all the toxic signs including lid retraction By the fifth month after operation the full clinical picture of myxœdema had developed The BMR at this time was − 15%, − 13% After the administration of thyroid extract (BP) gr 1 daily, increasing up to gr 4 daily, the signs of myxœdema disappeared Whenever the dose of thyroid extract reached gr 3 daily, lid-retraction reappeared (fig 4)

Brain (1936) has described a case in which the eye signs of toxic goitre followed long administration of thyroid extract to a patient suffering from adiposity It is evident from his photographs that lid-retraction was the prominent feature, and that this disappeared when the thyroid extract was discontinued Nevertheless lid-retraction cannot be a common consequence of thyroid medication We have seen, for example, 2 cases in which sufficient extract had been given to produce auricular fibrillation, yet lid-retraction did not appear, one of these cases is more significant in that lid-retraction had been present before thyroidectomy for toxic goitre

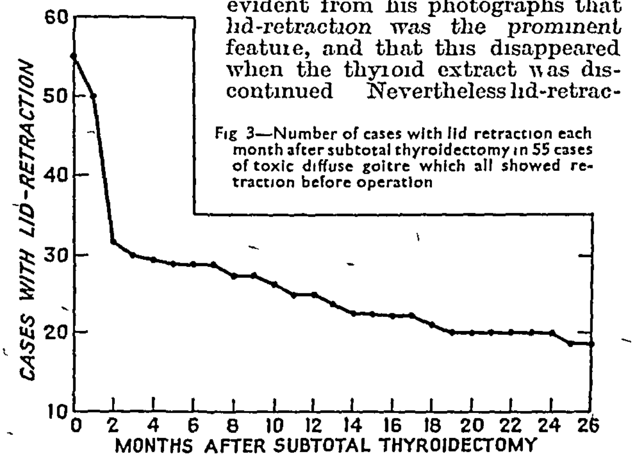

Fig 3—Number of cases with lid retraction each month after subtotal thyroidectomy in 55 cases of toxic diffuse goitre which all showed retraction before operation

THE EXTRATHYROID FACTOR

The fact that lid-retraction does not develop in much more than half the cases of toxic diffuse goitre, that it is not even universal in the severe cases, and that it is seldom encountered in toxic nodular goitre or in patients treated with thyroid extract suggests that thyroid toxæmia is not the sole exciting factor This conclusion is reinforced by those cases in which lid-retraction persists after adequate thyroidectomy and those in which there is a long interval between the disappearance of the toxic signs and of the lid-retraction

A consideration of cases of exophthalmic ophthalmoplegia provides some information about the nature of the extrathyroid factor concerned in lid-retraction In his study of 31 cases of this syndrome, Brain (1938) states that retraction of the upper lids is usually present, while Rundle (1941) found that two-thirds of his 15 cases had lid-retraction Many of these cases show no evidence of thyroid over-activity, and in fact myxœdema is not uncommon We have recently observed a case associated with well-marked myxœdema Such cases in which exophthalmos and lid-retraction develop together in the absence of thyroid toxæmia necessitate another and common causative factor The close analogy between exophthalmic ophthalmoplegia and experimental exophthalmos suggests that this factor is the anterior pituitary secretion The interaction of these two factors is illustrated by the two following cases

CASE 2—A girl of 19 consulted an ophthalmologist for prominence of the right eye which she had noticed for 4 months She was in good health and at full work, her weight was increasing and she had had no breathlessness, palpitations or other symptoms of thyrotoxicosis Apart from unilateral lid retraction without exophthalmos, there were no thyrotoxic signs, the thyroid gland was impalpable, the pulse rate was 80 and the BMR + 19%, + 11%, + 16% During the next 8 months her weight gradually fell and her pulse rate rose Examination then showed a moderate diffuse enlargement of the thyroid, a pulse rate of 100–110 and a BMR of + 52% + 46% Subtotal thyroidectomy was performed with satisfactory result, the lid retraction disappeared after 2 months and has not reappeared a year later

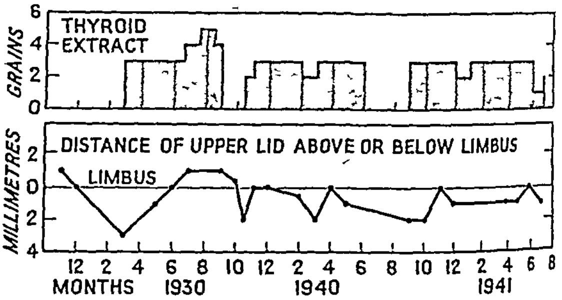

Fig 4—Relation of lid retraction to dosage of thyroid extract in a case of myxœdema after thyroidectomy for toxic diffuse goitre Lid retraction was judged to be present when the upper lid lay at or above the limbus

The fact that lid-retraction could occur at a time when the only sign of thyrotoxicosis was a doubtful elevation of the BMR suggests that some other factor was active, yet the disappearance of the lid-retraction after thyroidectomy implies that the thyroid toxæmia played an essential part in its presence Apparently this was a case in which a very mild thyroid toxæmia was able to potentiate the extrathyroid factor

CASE 3—A woman of 40 gave a history of progressive loss of weight, increasing nervousness and prominence of the eyes for 9 months There was a uniform small enlargement of the thyroid gland, fine tremor of the fingers and a hot moist skin The left upper lid was retracted so as to expose 1 mm of sclera above the limbus, the right upper lid fell just below the limbus, and both lower lids reached the lower border of the iris There was slight supra orbital puffy swelling but no exophthalmos The pulse rate was 108–129 and the BMR + 54%, + 48% Subtotal thyroidectomy was carried out and 2 months later the patient was well, putting on weight, the pulse rate was 80 and the lid retraction had disappeared, 6 months later she was complaining a good deal of the cold and there was a suggestion of myxœdema in her appearance, the pulse rate was 88 and the BMR − 10% At this time the eyes showed slight exophthalmos, 2 mm of sclera being exposed below the iris on each side In addition the left upper lid again rested on the limbus The myxœdema subsequently did not materialise and her condition has remained satisfactory The exophthalmos has continued to increase slightly in the right eye, 16 months after operation lid retraction developed in the right eye and has persisted since In addition there is now slight limitation of full lateral movement in both eyes

The first time this patient developed lid-retraction it was associated with the clinical picture of toxic diffuse goitre and was shown to depend on the presence of thyrotoxicosis The second time she developed lid-retraction it was associated with the clinical picture of exophthalmic ophthalmoplegia, and there was no thyrotoxicosis The same phenomenon, appearing twice in the same subject in a limited time, suggests that a common factor was present throughout At first this common factor could only produce lid-retraction when thyrotoxicosis was also present, later it became strong enough to do so on its own Since overactivity of the anterior pituitary gland has been put forward as the cause of both toxic diffuse goitre and exophthalmic ophthalmoplegia it seems reasonable to suggest that it may be the common factor in this case Whether this suggestion proves to be correct or not the case is interesting as providing a link between the lid-retraction of toxic diffuse goitre and the lid-retraction of exophthalmic ophthalmoplegia As a complete illustration of our views on the subject it forms a convenient ending to this article

SUMMARY

Lid-retraction is, like exophthalmos, a characteristic feature of toxic diffuse goitre The two conditions are easily separable clinically, though both give the impression of prominence of the eye Lid-retraction was present in 72 (54%) of 134 cases of toxic diffuse goitre, in 39 cases being associated with true or concealed exophthalmos

Unlike exophthalmos, which is apparently extrathyroid in origin, lid-retraction usually disappears when the thyrotoxicosis becomes inactive, although occasionally it appears or persists in the absence of active thyrotoxicosis Lid-retraction therefore appears to be governed by two factors, one of which is derived from the thyroid, the other must come from another source (possibly the anterior pituitary gland)

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INGUINAL HERNIA AT AN RAF HOSPITAL

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THE types of inguinal hernia with which we have to deal in the surgical division of an RAF hospital are, of course, limited both by the average age of the patients and by preliminary selection of the medical boards, but many surgical specialists are being called upon to deal with this common complaint, and it is important that the recurrence-rate should be the lowest possible In radical cure the surgeon must give more prominence to the time factor than he did in peace-time Durability of the repair remains the first consideration, but time in hospital becomes almost equally important Many of the cases we see in surgical outpatients occur in men who have finished, or are just finishing, technical courses and are awaiting posting to squadrons Thus it is necessary to find a technique which will enable them to be fit for duty in the minimum time and with the minimum prospect of a recurrence. In the age-group concerned such factors as chronic bronchitis, advanced atrophy of the abdominal muscles and excessive size of the hernia are seldom seen and rarely need to be taken into account when assessing the value of the various methods of repair

CLINICAL FINDINGS AND PRINCIPLES OF REPAIR

During the past 17 months 232 cases of inguinal hernia have been admitted for radical cure, 199 of these were seen in surgical outpatients first and the remainder were admitted direct on the advice of unit medical officers Of the outpatients 21 (11%) refused operation for various reasons and these were fitted with trusses

Hernias seen were divisible into the following types indirect 178 (77%), direct 28 (12%), recurrent 15 (6%), associated with undescended and ectopic testicle 11 (5%) The first two types were composed largely of patients who had had inguinal hernias for a varying number of years before coming into the Service In the remainder of this group the rupture had either occurred during some unaccustomed exercise, often the drill and physical training of the recruit's course, or else had been completely unnoticed by patient or MO until found at some special medical examination (e g, for air crew) The third type almost invariably gave a history of onset following hard manual labour (e g, cranking heavy lorries) and was of interest in that the recurrence often seemed to take the form of a complete new sac of the congenital indirect type Reference will be made to this point later in this paper The last type was usually sent for consultation because of some symptom arising from the undescended or ectopic testicle the hernia if present clinically being of secondary importance, at any rate in the patient's view

In assessing the principles on which a satisfactory repair must be based, it is instructive to analyse the basic lesion in each group In the first group the primary lesion is the presence of a congenital sac, it is reasonable to suppose that there is also some weakness of the floor of the inguinal canal and the very fact that this may be present seems to exclude those methods of repair which rely on the removal of the sac alone In the second group the weakness of the floor of the canal dominates the picture and, in our experience, the peritoneal bulge which forms the sac does not appear through the fibres of an attenuated conjoined tendon but through the gap between the lower edge of the tendon and the deep surface of the inguinal ligament I have also noticed that in a number of these cases the sac is not a true direct sac internal to the deep epigastric artery, but is often a bulge of peritoneum between this artery and the internal abdominal ring, displacing the artery inwards These facts suggest that in certain cases the fault is in the mechanism for closing the inguinal canal as much as in any weakness of the muscle itself The third group, cases of recurrent hernia, accounted for 6% of the recorded series On clinical examination there appear to be two types the first presented the clinical features of an inguinal hernia of the congenital variety, the second was of the direct type, occurring at the lower end of the scar and protruding through a gap between the insertion of the conjoined tendon and the lower attachment of the inguinal ligament Turner (1919) makes clear this division of recurrence into two types but draws the erroneous conclusion that the second type occurs because of weakness of the intercolumnar fibres of the external oblique following previous operation While it is true that this may be a contributory factor it must be obvious that if the floor of the canal is adequately repaired some weakness of these fibres will not itself be responsible for this type of recurrence At operation the most notable feature was the weakness of the scar tissue uniting the conjoined tendon to the inguinal ligament and in many cases its incompleteness, so that a gap was left both at the upper and lower ends The fourth group requires no further mention since the hernial lesion is always congenital and the same remarks apply as in the first group

The following principles emerge

1 The dissection of the sac must be complete so that no part of the neck remains to be a starting-point for a new sac

2 The lowest part of the gap between the conjoined tendon and inguinal ligament must be closed with the greatest possible care

3 Special measures are necessary to secure a firm union between the tendon and the inguinal ligament, simple catgut stitches being insufficient

I would add to these three principles two fundamental considerations of general surgical technique which have been emphasised by Wakeley (1940) first, the normal anatomy of the part should be restored rather than an artificial buttress produced which will stretch and weaken with advancing years, and secondly, adequate hæmostasis is essential at each step of the operation. These well-known surgical truths cannot be overemphasised so long as herniorrhaphy is regarded as an exercise for the junior surgeon rather than a procedure of major importance

OPERATIVE TECHNIQUE

Operative cure of inguinal hernia has occupied the attention of surgeons for many centuries Even in

Roman times Heliodorus described an operation for excision of the hernial sac and stressed the necessity for its complete removal as a safeguard against recurrence During the intervening period this truth sank into oblivion, as did many others, and was only rediscovered at the beginning of last century The earlier surgeons—Czerny and others—contented themselves with removing the sac and repairing the external ring, and it was not until Bassini and Halstead (1890) advised repair of the floor of the inguinal canal by suturing the conjoined tendon to the inguinal ligament that it was possible to operate on an inguinal hernia with any measure of success Of these two operations, the Halstead technique, with its displacement of the cord to the subcutaneous tissues and cutting of the arching fibres of the conjoined tendon, has rightly fallen into disuse on the grounds that it fails to restore the normal anatomy The Bassini technique, on the other hand, has survived in principle, through an enormous variety of modifications, because of its strict adherence to the anatomical principles of the inguinal canal

Other techniques have from time to time been advanced Turner (1919) asserted that in healthy young adults no repair was needed other than removal of the sac, provided the intercolumnar fibres of the external oblique were left intact This dictum is not generally upheld nor would it be a safe one in which to trust under Service conditions where long postoperative abstinence from hard manual labour is impossible Injection treatment has also been tried Halsted (1893) mentions it and lately it has been revived by a few surgeons, but it can be dismissed at once from the Service point of view as being both too protracted and too uncertain in its results

Lately two main schools have arisen the first, originating with Gallie and Le Mesurier (1924), favours autogenous fascial grafts, the second, sponsored by Ogilvie, Maingot (1937), Sampson Handley (1941) and others, advocates the use of floss-silk or linen thread rather than fascia Both schools have produced good results, but in each case the method used has drawbacks The Gallie method requires a second long incision in order to obtain the fascia, and this not only adds considerably to the time of the operation but produces a lesion in the thigh which may give rise to hæmatoma and subsequent disability from muscle hernia The second method demands the introduction into the tissues of a large amount of unabsorbable material with consequent danger of over-stimulation of the tissues and wound infection—an extremely serious matter in an essentially clean operation Both have their uses, in large ventral hernias in young adults several fascial strips may be needed to fill in the defect, and in the elderly patient with little or no muscle tissue left a lattice of permanent silk or linen is undoubtedly an excellent way of creating a plaque of fibrous tissue to retain the abdominal contents, but neither of these techniques fulfils the requirements of the average hernia in a Service patient

The following is a description of the operation which we have adopted more or less as a routine, it is a modification of the fascial graft technique described by McArthur (1904) The principles of this technique were introduced to me by Group-Captain Geoffrey Keynes, but the modified procedure, as described below, I evolved subsequently

The usual inguinal incision is made and the external ring identified The external oblique aponeurosis is divided in the line of its fibres and the inguinal canal laid bare The edge of the conjoined tendon is dissected out and the cord freed, great care being taken to preserve both the ilio inguinal and iliohypogastric nerves The sac is next identified, cleaned, transfixed and ligatured at the uppermost limit, the operator making sure that no part of the neck remains, and the stump is sutured to the deep surface of the transversalis muscle Four No 2 catgut sutures are now inserted between the conjoined tendon and the inguinal ligament, after they are all in place they are tied, beginning with the lowest which is tied fairly tightly, and proceeding to the internal ring where the last stitch is tied fairly loosely so that it will splint the conjoined tendon without putting undue strain on the muscle fibres A strip is cut from the edge of the inner flap of the external oblique aponeurosis and is left attached to the pubic bone, this is now darned loosely between the inguinal ligament and the conjoined tendon so that it is under no tension, and it remains, in fact, a graft and is *not* used as a suture The free end of this graft is then secured with a fine linen suture The floor of the inguinal canal is next inspected and particular attention is paid to the extremities The cord is allowed to fall back into position and the external oblique aponeurosis is sutured in the usual way with continuous catgut

The principal modifications of this operation from that originally described by McArthur lie in the insertion of the catgut sutures, which take up any strain to which the graft would otherwise be subjected in the postoperative period, and in the abandonment of the use of a second fascial strip to close the external oblique aponeurosis This is not necessary and only adds time to the operation, besides making larger the gap which has to be closed in the external oblique aponeurosis McLaughlin (1941) has described a similar technique, but this again uses the graft as a suture, a procedure which must vitiate a great part of its usefulness since it has been proved that a graft under tension tends to die and be absorbed instead of serving as a living framework for strong scar tissue

The postoperative regime is 14 days in bed, 7 days in the ward, 21 days sick leave and 28 days light duty Thus patients are ready for full duty in 2½ months from the time of the operation This shortened period between operation and duty is justified by the technique used, any further restriction would undoubtedly predispose to recurrence

DISCUSSION

That the technique described fulfils the principles laid down earlier in this paper is apparent The sac is removed at its highest point, the lowest part of the floor *of the inguinal canal is closed both by catgut* suture and careful fascial grafting, and firm union between the conjoined tendon and the inguinal ligament is assured by the presence of both the tension sutures, and the autogenous graft In addition the normal anatomy of the area is retained, and, if hæmostasis is secured, the result should be favourable in any given case The value of this technique must be assessed on its final results as shown by the presence or absence of recurrence, but I feel its use is justified on theoretical ground I do not assert that one standard technique should be applied to all cases of inguinal hernia, adaptability being as important in herniorrhaphy as in any other operation Nevertheless I do suggest that the operation described is the most suitable, the safest and the speediest for use in the average case of inguinal hernia as seen amongst Service personnel

SUMMARY

Of 232 cases of inguinal hernia admitted to an RAF hospital over 17 months, 77% were indirect, 12% direct, 6% recurrent and 5% associated with undescended and ectopic testicle

Principles to be observed in repair are complete dissection of the sac, proper closure of the gap between the conjoined tendon and the inguinal ligament, and special measures to secure firm union between the tendon and the ligament

A modification of the MacArthur hernioplasty, embodying these principles, is described, designed to ensure that there is no tension on fascial grafts

A postoperative regime of 21 days in hospital, 21 days sick leave, and 28 days light duty enables the man to get back to full duty in 10 weeks from admission to hospital

The method combines strong repair with relatively short incapacity

My thanks are due to the O C Hospital, and to Wing Commander J C Ainsworth Davis, for their advice and *encouragement*

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CALCINOSIS CUTIS AND SCLERODERMA

THIBIERGE-WEISSENBACH SYNDROME

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PATHOLOGICAL calcification is usually classified into two main types—metastatic and dystrophic Metastatic calcification is a rare condition in which calcium is mobilised from the normal bony storage depots and is deposited in apparently healthy tissues at various other sites It was described by Virchow in association with chronic nephritis and may occur in a number of diseases characterised by excessive bone destruction—e g , leukæmic myelosis, multiple myeloma, or carcinomatosis of bone—or it may be a result of parathyroid disease or of hypervitaminosis D The demineralisation leads to rarefaction of bone, there is generally hypercalcæmia, and the calcareous impregnation tends to occur in internal organs and viscera, such as lungs, kidneys, and stomach mucosa, as well as in the skin and subcutis In dystrophic calcification, on the other hand, lime is deposited only locally in previously dead or degenerate tissue and there is no demineralisation of the skeleton with resultant osteoporosis and no excess of calcium in the blood Necrosis and hyaline change are the chief antecedents of calcification of this common type , lime may be found, therefore, in lesions such as caseous tuberculous areas, degenerating tumours, sebaceous cysts, healed abscesses, subcutaneous veins (phleboliths) and so on

We are concerned here with another variety of pathological calcification in which calcareous infiltration occurs more or less exclusively in the skin and subcutaneous tissues This type, for which the term calcinosis is sometimes reserved, may or may not be accompanied by osteoporosis but hypercalcæmia is not constant , nor can the mechanism be explained entirely by purely local preceding tissue degeneration, although there appears to be evidence of some such preliminary change This group has been variously designated as idiopathic, primary or metabolic calcinosis Two clinical forms are often described The first is calcinosis circumscripta, affecting as a rule women in the second half of life, in which circumscribed, sometimes symmetrical but not very extensive lime deposits are laid down in and beneath the skin mainly of the upper extremities, particularly around the peripheral finger joints , it progresses slowly without serious impairment of health The second is calcinosis universalis, in which the calcium deposits are multiple and widespread, involving perhaps deeper interstitial connective tissues such as those of tendons, muscles and nerve sheaths as well as the skin , it is more commonly found in children and has a much graver prognosis Rosenberg (1940) has pointed out, however, that differentiation of these two types is applicable only to characteristic examples, many cases being indeterminate or " transitional " According to Brooks (1934) it would perhaps be more accurate to state that when calcinosis affects children the deposits tend to be more extensive and widespread, the disease more severe and the outlook more gloomy than is the case in adults

Whether calcinosis cutis constitutes a clinical entity or occurs as a " primary " affection seems open to doubt Certainly in a high proportion of recorded cases, as in the one now to be described, the cutaneous and subcutaneous calcification was but one manifestation of a systematised morbid complex

CASE-REPORT

A married woman, aged 65, first came under observation at St Thomas's Hospital in March, 1941, complaining of ulcers of arms and legs and indigestion Father died of pulmonary tuberculosis , mother of cancer of liver, aged 68 , one sister died at 40 after operation for Graves's disease , 5 siblings are alive and well , 4 children likewise Menstrual history normal The patient has never had a serious illness but ever since childhood has been subject to cold blue hands and feet during winter time and to muscular rheumatism Ulcers first appeared on the front of the legs 12 years ago and have been discharging thick whitish gritty material more or less continuously ever since About 2 years ago similar ulcers developed along the backs of the forearms and have been discharging the same type of substance For 5 or 6 years the circulation in her hands and feet has been steadily getting more troublesome and latterly has bothered her on any exposure to cold, in summer as well as winter Her fingers go dead white and are painful, turning blue as they recover Indigestion has been present for about 8 years It is getting worse and is her chief complaint There is no difficulty in swallowing but she feels all solid food sticking low down She then gets pain and regurgitates the food after a short while She does not vomit She now lives mainly on a sloppy diet For a long while she has felt easily tired but has managed to carry on a small business until a few months ago when she had to give up because of increasing general weakness For instance, she has been finding difficulty in getting her hands behind her back to do up her clothes, or in lifting herself without help, and she has to drag herself about Her muscles ache constantly

Fig 1—Left leg Calcareous infiltration of soft tissues

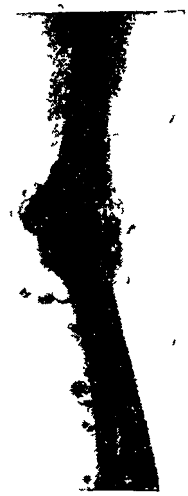

Fig 2—Forearm Subcutaneous calcium deposits mainly along ulna

A well covered woman not looking ill Face pale, smooth and rather expressionless Extensor aspects of both forearms are studded with a chain of hard fixed nodules along ulnar border from about 1 in below olecranon to same distance above wrist Some have broken down and are discharging thick whitish gritty material and resemble gouty tophi Much surrounding scar tissue Identical appearance on anterior aspects of both legs, mainly middle third, lateral to tibial crests No palpable concretions around knees or ankles In addition to scar tissue there is much surrounding dermatitis Superficial scleroderma is present over the neck, shoulders, front and back of upper chest, dorsa of hands and lower portions of forearms Distal parts of all fingers are pale, shiny, and smooth, with loss of elasticity in skin All the neck region shows diffuse brown pigmentation with depigmented waxy linear streaks along lines of cleavage Similar pigmentary changes on backs of hands and extensor surfaces of lower forearms She has noticed that her neck and hands have been getting brown lately although she is never out in the sun Numerous telangiectases are present over forehead, face, shoulders and neck, especially the V area All small, some are of " spider nævus " type fading on vitropressure, others tiny fixed red blotches A few on buccal mucosa Power in all skeletal muscles seems to be diminished, and active movements of arms, legs and trunk are restricted, although the large joints are free clinically and radiologically She cannot raise herself from a sitting position without the help of her arms Well marked Raynaud's symptoms on immersing hands in cold water Urine no abnormality BP, 170/90 mm Hg No hardening of peripheral arteries Abdomen mid-epigastric tenderness Umbilical hernia size of large plum Respiratory and central nervous systems normal Blood Wassermann and Kahn tests negative , mild iron deficiency anæmia , leucocytes, 5300 (polymorphs 45%, lymphocytes 45%, large hyalines 8%, eosinophils 1%, basophils 1%) Serum calcium (on two occasions), 8 5 mg and 8 9 mg per 100 c cm , plasma inorganic phosphorus, 4 1 mg per 100 c cm , uric acid, 2 6 mg per 100 c cm

Histology of sections of skin from sclerodermatous areas on neck and forearm (Dr W Freudenthal) —"In the bigger piece the collagen bundles, especially in a wide area in the deeper cutis, have lost their fine fibrillary structure and are caked together Although this sclerosing process has reached a high degree the elastic fibres are comparatively little altered Similar changes in a lesser degree seem to be present in the middle of the cutis of the smaller piece The histological pictures are consistent with your clinical diagnosis of scleroderma "

Radiological examination (Dr J W McLaren) —Extensive calcareous deposits are present in the soft tissues of both legs (fig 1), forearms (fig 2) and lower left thigh, the deposits being discrete and also confluent There is no evidence of any calcification in the biliary or renal areas or in any abdominal viscus The pituitary fossa is of normal size, but the calcification of the posterior clinoid processes appears to be more extensive than normal There is no evidence of decalcification in the skeletal system No substernal enlargement of the thyroid or thymic hyperplasia is shown Arthritis is present in the carpus and fingers and to a lesser extent in the tarsus and knees The affected joints show erosion of cartilage with some punched out areas and there is loss of joint space and bony rarefaction The spine shows gross osteoarthritis and the hips early osteoarthritis The œsophagus is greatly dilated but from the appearance of the film (screening was not seen) the dilatation does not seem to be due to a true achalasia of the cardia but to a spasm in the lower end of the œsophagus, the nature of which is not clear (fig 3)

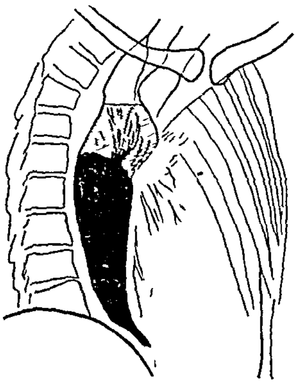

Fig 3—Tracing of radiogram of œsophagus after barium swallow Dilatation with considerable non opaque content due to retained food

Progress —The patient's dysphagia got progressively worse so that eventually she was unable to keep even fluids down She was readmitted to hospital in a very dehydrated state and died 10 days later (April 24, 1942) from bronchopneumonia During this time her blood urea was 87 mg per 100 c cm and her urine contained much albumin , urinary creatinine was estimated at 0 32 g per day and urinary creatine at 0 02 g per day (24 hour save vol 340 c cm), which amount was reported as probably not significant in view of the patient's sex.

AUTOPSY *

External appearances —Well nourished, well developed woman Calcified lumps in subcutaneous tissues of ulnar surfaces of both arms and tibial surfaces of both legs below knees Large ulcerated areas over both legs

Heart —(12¾ oz) Serofibrinous pericarditis Degeneration of atrophied myocardium Slight thickening of free edges of mitral and tricuspid valves Ante mortem thrombus filling right auricular appendage Nodule of hæmorrhage about 0 8 cm in diameter between septum primum and septum secondum of foramen ovale Patchy atheroma in coronary arteries Moderately severe general atheroma

Lungs —(R' 17½ oz , L 11 oz) Bronchopneumonia in posterior part of lower lobes of both Emphysema elsewhere

Alimentary tract —Dilatation of œsophagus up to 7 cm in diameter extending from stomach to just below level of thyroid cartilage Erosion of mucosa with much scarring at junction of stomach and œsophagus Acute ulcer (0 9 × 0 9 cm.) just distal to this, and linear erosions throughout stomach Inner lining of œsophagus covered in greater part by white shining membrane showing ill defined white lines and patches suggesting scars and dull red patch (4 × 2 5 cm) suggesting submucous hæmorrhage Slight anthracosis of lymphatics of peritoneum Multiple false diverticula of colon

Liver —(2 lb 5 oz) Severe atrophy with cough furrow in right lobe and transverse furrow in left lobe No gall-stones

Spleen —(3½ oz) Small slight hyperplasia of pulp

Kidneys —(R 4¼ oz , L 4¼ oz) Atrophied with pale cortex having interrupted pattern One large and a few small arteriosclerotic scars in cortex of left kidney Congenital cyst 2 5 cm in diameter in right

Urinary bladder —Slight hæmorrhage into submucosa and œdema of trigone

Uterus —Slight hæmorrhage into mucosa

Ovaries —Simple atrophy

Adrenals —Simple atrophy of cortex of each

Thyroid —Severe atrophy Small adenoma in left lobe

Pancreas —A few small fat necroses

Brain —(3 lb 1 oz) Simple atrophy Middle ears clean

Joints —Osteoarthritis of fingers Right knee joint large amount of brown synovial fluid , cartilage slightly brownish, surface irregular and eroded Soft red mass bulging from bodies of 7th and 8th thoracic vertebræ with destruction of body of 7th

Microscopic examination —Sections were cut of pituitary, parathyroids, adrenals, thyroid, pancreas, thoracic vertebræ, skin, œsophagus, muscle, coronary artery, lung, liver and kidney These confirmed the macroscopic findings and showed that the destruction of the body of the vertebra was due to osteitis fibrosa Calcification of the subcutaneous tissue appeared as deposits of calcium with no surrounding reaction, and apart from slight mucoid degeneration no trace of previous degeneration or necrosis

Chemical examination —The subcutaneous lumps consisted largely of calcium carbonate and to a lesser extent of calcium phosphate No trace of urates

DISCUSSION

The most striking feature of the case is the severe degree of calcinosis shown radiologically In spite, however, of the widespread calcareous infiltration which has been developing over a period of at least 12 years the patient has maintained comparatively good general health until quite recently , this is in contrast to the usual course of " calcinosis universalis " which is generally described as affecting young people and carrying a bad prognosis

Judging by the absence of skeletal demineralisation, of calcification of internal organs and of hypercalcæmia, no fundamental derangement of calcium metabolism appears to be present Normal serum-calcium levels, however, are not proof of normal metabolism without complete calcium balance studies For example, Bauer, Marble and Bennett (1931) made exhaustive studies of calcium, phosphorus, and nitrogen metabolism in a child with severe generalised calcinosis and found a well-marked tendency to retain the absorbed calcium and phosphorus in spite of normal blood levels—a tendency which was more so with calcium than phosphorus On the other hand, Brooks (1934) found pathologically high levels of serum calcium, plasma inorganic phosphorus and plasma phosphatase associated with retention of both calcium and phosphorus following probably normal absorption A disturbance in calcium and phosphorus metabolism has been indicated in other cases but in many no abnormality has been demonstrated and there is no proof that calcinosis cutis is a primary metabolic disorder analogous to uratic gout The view most generally held is that the calcification is the result of some local change in the connective tissues giving rise to a physicochemical affinity for calcium salts

Of particular interest in the present case, therefore, are the various other symptoms associated with the calcinosis—the diffuse symmetrical scleroderma with telangiectasis and pigmentation, the Raynaud's phenomena, the arthropathy, the achalasia-like lesion of the œsophagus and the myasthenia One must suspect that all these morbid processes are interrelated and that they may have a single cause

Such a line of approach has been suggested by various clinicians, notably Langmead (1923), who discussed the relationship between scleroderma, calcinosis, dermatomyositis and myositis fibrosa, and concluded that these four diseases are either all parts of one disease or that each is a clinical manifestation rather than a morbid entity He pointed out that many cases of scleroderma in which the onset was recognised and was accompanied by œdema or an eruption, and in which muscles became sclerosed, might serve equally to illustrate dermatomyositis, while some of the more chronic cases under the title of dermatomyositis are exactly comparable to others recorded as scleroderma Underlying these four disorders might be a single morbid process When it produces an acute reaction its symptoms are fever, œdema, skin lesions and myopathy, which is the picture of dermatomyositis, when the reaction is less acute sclerosis predominates over round-cell exudation and there is hardening of skin, subcutaneous tissues and muscle An obliterative arteritis would explain the commonly associated Raynaud's symptoms, and in the fibrous tissue formed in the skin or subcutaneously, and probably also in that which is perivascular, calcareous salts may be deposited and thus lead to a diagnosis of calcinosis

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* Abstract from the records of St Thomas's Hospital medical school

In the present case it seems difficult to ascribe the calcinosis simply to a circulatory disturbance and failing local nutrition, in view of the absence of calcification in the digits, where vasospasm was so well marked, or in the areas affected by scleroderma Moreover, there was no clinical evidence either of vascular insufficiency or of scleroderma in the regions where calcinosis occurred It is also noteworthy that while the scleroderma was of a mild superficial type the calcinosis was severe and widespread Langmead's observations, however, concerning the identity of diffuse symmetrical scleroderma with dermatomyositis have been confirmed by the work of Dowling (1936, 1939), Freudenthal (1940) and Griffiths (1940), who from clinical histological and biochemical investigations conclude that these two conditions are one and the same disease involving chiefly blood-vessels, skin and skeletal muscles throughout the body In both muscle and skin the changes were considered to be degenerative and not inflammatory

Calcinosis has been observed in a number of cases of dermatomyositis and that a common pathogenic agent presumably of a toxic nature may be responsible both for diffuse scleroderma, dermatomyositis and calcinosis is shown in a case recorded by Talbott and others (1939), in which autopsy revealed, in addition to dermatomyositis, scleroderma and calcinosis, focal renal tubular infarction, obliterating endarteritis of interlobular renal arteritis, generalised arteriosclerosis and arteriolosclerosis, and central lobular necrosis of the liver

The association between calcinosis and scleroderma has, of course, been long recognised, though a group of cases was not reported until 1911 when Thibierge and Weissenbach described a patient with combined scleroderma, sclerodactylia and calcinosis, and collected 8 other cases from the literature Subsequently the syndrome has often been recorded In a tabulation of all cases of calcinosis reported up to the end of 1937—a total of 215—Atkinson and Parkes Weber (1938) note that scleroderma was present in about 36% But in 102 of the 215 cases the case-reports recorded that the calcinosis was associated with one or more of the following symptoms scleroderma, sclerodactylia, Raynaud's phenomenon, acrocyanosis, vasomotor disturbances, telangiectases, dermatomyositis and muscular wasting Such associated symptoms may also have occurred in others of these cases in mild or abortive degree or they may not have been noted or considered relevant (e g, Brooks 1934) On the other hand, when scleroderma or dermatomyositis is the main symptom calcinosis of minor degree may be overlooked unless a complete radiological examination is made

Arthropathies occur in diffuse scleroderma though they usually receive little mention in textbook accounts of the disease In 1896 Dercum emphasised that in scleroderma the disease process was not necessarily limited to the skin but might include other structures as well, such as muscles, tendons, fasciæ, bones and joints, and that the involvement of these structures might at times exceed the skin changes He noted, moreover, that bones and joints as well as muscles could be affected independently of overlying scleroderma, so that the changes in them could not be attributed to contractures and local interference with nutrition In 1898, in a paper on scleroderma and chronic rheumatoid arthritis, he cited a case in which polyarthritis of typical rheumatoid arthritis type preceded by several years the onset of diffuse generalised scleroderma with pigmentation and telangiectasia Muscles were also extensively involved, being excessively firm and hard, some of a cord-like feel He stated that repeated observations had convinced him that the conception of scleroderma, as of rheumatoid arthritis was too limited Adrian and Roederer (1920) studied the joint changes which had been described in scleroderma during the preceding 60 years and divide them into three groups: (1) joints affected primarily followed by scleroderma, (2) joints and skin affected together, (3) skin changes first and then joints They state that joint lesions in scleroderma are almost entirely confined to females and are of the polyarticular chronic rheumatoid type—not arthritis deformans According to them the process appears to originate in the synovial membrane, involving secondarily the bones and cartilages, which become the seat of rarefying changes leading to atrophy. The small joints of the hands and feet are most implicated, then the knees The arthropathy in my patient accords with this description, affecting mainly the carpus and fingers and to a lesser extent the tarsus and knees, and showing loss of joint space and erosion of cartilage

Dysphagia has often been observed in diffuse scleroderma and has as a rule been ascribed to involvement of the buccopharyngeal or œsophageal mucosa Kuré and others (1936) investigated œsophageal function radiologically in 5 cases, 2 of whom complained of dysphagia. They found in each case considerable delay in passage of the meal-mass, some of which remained stuck to the walls of the œsophagus and showed an abnormal gaping of its lumen They ascribed these disturbances to an increase in connective tissue in the œsophageal walls Weissenbach and others (1938) say that œsophageal lesions nearly always occur in the late stages of scleroderma and especially in those cases with well-marked mucosal atrophy The dysphagia, as in my patient, consists in difficulty in swallowing solid food and in a sensation of blockage, sometimes located at the upper extremity of the œsophagus, sometimes behind the sternum, and sometimes in the region of the cardia This sensation may last from a few minutes to several hours and may be associated sometimes with severe cramp-like or burning pain, often with nausea and more rarely with regurgitation True vomiting never occurs Radiologically, Weissenbach and co-workers, like Kuré and others, found in most cases morphological integrity of the œsophagus, but delay and incomplete evacuation of the opaque bolus, part of which adhered as a thin coating to the walls of the œsophagus Peristaltic contractions were almost non-existent Histologically, definite changes were observed, mostly limited to the layers subjacent to the mucosa These comprised lamellar thickening of the submucosa, degeneration of the elastic network, hypertrophy of the muscularis mucosæ and atrophy of the muscular coat

Dysphagia is also quite common in dermatomyositis and is regarded as a grave sign indicating involvement of the palatal and pharyngeal muscles It was present in 27 out of 40 cases reviewed by O'Leary and Waisman (1940) That the œsophagus itself may also be affected was shown in a case of Dowling's (1939) of scleroderma with extreme myopathy, in which radiography revealed an apparent obstruction at about the junction of the upper and middle thirds of the œsophagus for which no obvious cause was found at autopsy The X-ray appearance was ascribed to slow transit of the bolus owing to weakness of the œsophageal musculature The present case showed no buccopharyngeal atrophy and there was no involvement of the voluntary muscles of deglutition, so that the dysphagia and achalasia-like radiological appearance seem to have been due to changes in the œsophageal connective tissue or musculature or possibly both

Of the other clinical features, while telangiectasis and pigmentary changes are common in scleroderma of superficial type, in the present case the red spots and telangiectases were most numerous on the face, which apart from being rather smooth and expressionless, showed no obvious sclerosis Weissenbach and others (1938) have observed, however, that the distribution of these vascular lesions may be independent of the scleroderma Raynaud's symptoms are, of course, often present in both scleroderma and dermatomyositis Lewis (1940) says that most of the cases of scleroderma he sees are sent to him in the first instance because of these symptoms Finally, there was evidence in my patient of progressive general muscular weakness

Dowling and Griffiths (1939) point out that the occurrence of myasthenia in scleroderma seems to have been overlooked to some extent, and they have confirmed its existence in every case since they began to look for it

SUMMARY

In a woman of 65, extensive calcinosis cutis was associated with superficial diffuse symmetrical scleroderma accompanied by pigmentary changes, telangiectases, and well-marked Raynaud's phenomena Other features were an arthritis involving chiefly the carpus and fingers, an achalasia-like lesion with dilatation of the œsophagus, which was responsible for long-standing dysphagia, and general progressive muscular weakness

It is considered from the composite picture that the case belongs to the scleroderma-dermatomyositis group as studied by Dowling and co-workers

While cutaneous calcification has long been recognised in association with scleroderma (Thibierge-Weissenbach syndrome), and has also been observed in dermatomyositis, it is believed from a study of case-records of so-called primary, idiopathic or metabolic calcinosis that certain of these cases likewise were examples of the scleroderma-dermatomyositis complex, the calcification merely being part of a varied symptomatology

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ABSORPTION OF SULPHANILAMIDE APPLIED LOCALLY

BLOOD LEVELS IN 41 CASES

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FOR some months the local application of sulphanilamide has been a part of the treatment adopted for traumatic and surgical wounds in patients in the orthopædic beds of this hospital The present work started from the observation that in some of these patients toxic symptoms occurred in the first few days of the post-operative period These included anorexia, nausea or vomiting, cyanosis, depression and prostration The cyanosis was not due to pulmonary complications The vomiting was often delayed to the second and third day, and was not considered attributable to the anæsthetic Ward sisters reported that many of these patients seemed more ill after their operations than those who underwent similar procedures before sulphanilamide was used All this suggested that the drug was being absorbed rapidly enough to reach a considerable concentration in the blood It was therefore decided to take blood from a number of patients so treated and to determine the concentrations reached

Previous workers have agreed that sulphanilamide applied locally is absorbed, but they have not agreed on the degree of absorption Jensen, Johnsrud and Nelson (1939) used local sulphanilamide in treating 39 compound fractures, and they publish blood levels from 2 of these Their figures are of the same order as ours Most of the English work has been clinical in scope and has lacked the control of blood estimations Some figures published by Hawking (1941) are much lower than the ones found here The blood concentrations in his series were rarely greater than 1 5 mg per 100 c cm The ones obtained here have usually been over 5 and sometimes over 20 mg per 100 c cm Throughout this series sulphanilamide ('Streptocide' Evans) has been used It is hoped later to publish for comparison a series using sulphathiazole, both alone and mixed with sulphanilamide

METHOD

Application of sulphanilamide to the wounds—In traumatic wounds, including compound fractures, excision of skin edges and devitalised tissue is followed by packing with a roughly measured quantity of sulphanilamide powder, worked into the crevices of the wound with the fingers Where possible primary suture follows If the wound has to be left open, 'Vaseline' gauze is used as an immediate dressing Local sulphanilamide has also been used as a precaution against sepsis in the operative wounds of a number of routine orthopædic procedures A roughly measured amount of the powder is placed in the depths of the wound After the insertion of a few deep catgut sutures, the skin edges are tightly opposed by a continuous thread suture, with the addition, where necessary, of a few tension sutures Mastisol is applied to seal the sterile dressing on to the wound When a tourniquet is used it is not removed until the wound has been closed and a pressure dressing applied When abscesses have been opened, and the wound left open for drainage, the cavity has been packed with the powder, and a vaseline gauze dressing applied

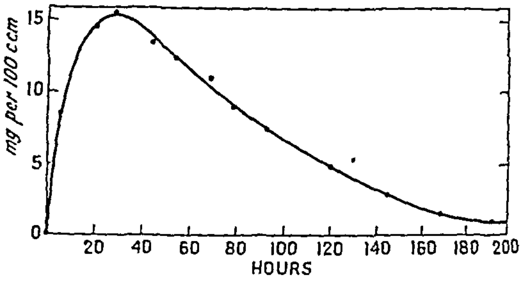

Fig 1—Case I arthrodesis of hip in man of 59 Blood concentrations reached by absorption of 15 g sulphanilamide deposited in muscles around upper end of femur

Estimation of sulphanilamide in the blood—Blood was taken from forearm veins, using a 5 c cm syringe and a hypodermic needle, and was received into tubes containing potassium oxalate After preliminary trial of several methods the one adopted is essentially that of Werner (1939)

One c cm of the blood is added in a stream to 4 c cm of 5% trichloroacetic acid in a centrifuge tube, and the mixture centrifuged, 2 c cm of the clear supernatant fluid is placed in a narrow test-tube, and there are added, first, 1 5 c cm of N/4 NaOH, and then 0 5 c cm of a 2% solution of paradimethylaminobenzaldehyde in 7% sulphuric acid A yellow colour develops It is difficult to match in a colorimeter, but as Werner points out it may be matched by solutions of potassium chromate, of which permanent colour standards may be prepared It was found possible to make the match even better under the lighting conditions used here by adding a little dichromate to the chromate To make the scale of standards, a series of solutions was first made up, containing 1, 2, 4, 6, 8, 10, 12, 14, 16, 18 and 20 mg of sulphanilamide in 100 c cm of water These were treated with the reagents to make a series of colour standards each of which was then individually matched with a separate tube of water coloured with potassium chromate and dichromate The standards were thus made by actual matching and not from Werner's table The tubes containing the chromate standards were mounted in a rack separated by a distance a little greater than the diameter of each, so that any one of the similar tubes used for the blood centrifugates could be held between any pair of adjacent tubes of the colour series Pale blue paper, illuminated by a 25 watt frosted lamp at a distance of 18 in has been used as a background

Only free sulphanilamide has been estimated, for it alone is therapeutically active, and preliminary trial showed that the method is unsatisfactory for the estimation of total sulphanilamide This and other defec re fully dealt with by Morris (1941), and in view of his survey no great accuracy can be claimed for the results But there is no point in pushing the blood estimations to a higher degree of accuracy than that with which the amount of drug placed in the wound can be gauged, and this is of necessity approximate Some is spilled, and some is often washed out by hæmorrhage The chief merit of Werner's method is its simplicity, and in view of the relatively low standard of accuracy required, and the limited time and facilities available, it was considered most suitable for the purpose

Reproducibility of results, checked by running estimations in duplicate and matching tubes in random order so that the anticipation of a result plays no part in obtaining it, suggests that between 5 and 15 mg per 100 c cm the error is of the order of ± 5% No allowance has been made for adsorption on the precipitated proteins As all specimens are treated alike, this introduces a systematic error, and the accuracy of the method is higher for comparative than for absolute measurements Standard sulphanilamide solutions made up in blood give readings a little lower than do similar solutions made up in water Consequently the figures quoted below are all probably too low by from 5 to 10%

CONCENTRATIONS REACHED IN THE BLOOD

In all the earlier cases blood specimens were taken every 6 or 8 hours for the first 24 hours, then 12 hourly, and finally daily Two typical curves are shown (figs 1 and 2) They have a characteristic shape which can easily be explained by rapid absorption and slow excretion

In the 27 cases which were followed over the peak concentration and down again, the value obtained 24 hours after operation was within 10% of the peak value except in one case, that of an arthroplasty of the hip With this same exception, the peak value was reached between 16 and 30 hours after operation In the case of the arthroplasty the blood sample taken 8 hours after operation gave the highest concentration of sulphanilamide In some of the later cases in the series only one blood sample was taken, and that 24 hours after operation

The cases are summarised in the table, which gives a short statement of the operation, with the amount of the drug placed in the wound, the concentration reached in the blood at the end of 24 hours, and short notes on toxic effects As a basis for comparison, the last column contains the ratio of the blood concentration after 24 hours to the amount of drug used—i e, the blood concentration attained per gramme of sulphanilamide used The order of cases is roughly anatomical

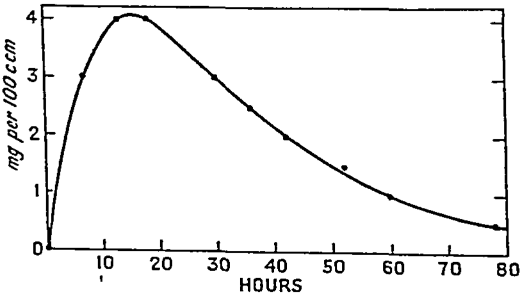

Fig 2—Case 28 compound fracture of tibia and fibula in man of 39 Blood concentrations reached by absorption of 10 g sulphanilamide deposited among injured muscles in leg

Cases 1–19 are of operations in the region of the hip and thigh

Cases 20–24 are of operations in the region of the knee

Cases 25–35 ,, ,, ,, ,, leg and foot

Cases 36 to 41 form a more mixed group

It will be seen that, when the tissue from which absorption occurs is muscle which has a good circulation, the blood concentration attained at the end of 24 hours per gramme of drug deposited in the wound is in the neighbourhood of unity In one case only, where the wound was around the hip, is the ratio as low as 0 5 This was the arthroplasty already mentioned In the course of a cup arthroplasty by the method of Smith-Petersen 12 g of sulphanilamide was buried among the muscles around the left hip-joint, 24 hours later the blood contained 6 mg per 100 c cm of sulphanilamide But the specimen raken at 8 hours contained 10 mg per 100 c cm The wound was extensive, and the dressing was soaked through, so that the low ratio is probably due partly to loss into the dressings and partly to rapid absorption giving an early peak

SUMMARY OF FINDINGS

Case	Operation	Age	Sex	(A) drug used (g)	(B) Blood concn in 24 hr (mg per 100c cm)	Toxic symptoms	B/A
1	Arthrodesis of hip	59	M	15	15	C D	1 0
2	SP pin and graft	59	M	15	15	C V	1 0
3	,	66	F	18	22	Nausea	1 2
4	, ,	72	F	18	22	C V	1 2
5	, ,	70	M	15	12	C, V	0 8
6	, ,,	78	F	8	8	C H died	1 0
7	SP pin	65	F	5	5		1 0
8	,,	64	F	10	11	C V	1 1
9	,,	60	F	12	14	C V P	1 2
10	,,	79	M	12	14 5	C, V	1 2
11		63	M	5	4		0 8
12	Biopsy of ilium ¼ of bone removed	49	F	12	12 5	C	1 0
13	Arthroplasty of hip	29	M	12	6	C, V, P	0 5
14	Open redn fract femur	36	M	4	4 6	P	1 1
15	Osteoma of femur, excised	51	F	17	13	C V	0 8
16	Plating of femur	20	M	10	8	P	0 8
17	Deep abscess of thigh	54	M	10	1 5		0 15
18	Superficial abscess of thigh	49	M	20	5 5		0 25
19	Graft, ilium to tibia	20	F	25	22	C, V, P	0 9
20	Semimembranosus bursa	13	M	5	6 5	C	1 3
21	Semimembranosus bursa	60	F	8	6 5	C V	0 8
22	Patellectomy	33	M	5	4		0 8
23	,	61	M	10	8 7	V, D	0 9
24	,,	63	M	10	10		1 0
25	Lacerations of leg	36	M	20	4		0 2
26	Sarcoma of fibula, excision	17	M	10	8	C	0 8
27	Same patient repack	17	M	8	5 5		0 7
28	Cpd fract tib & fib	39	M	10	3 5	G, G	0 35
29	, , ,	33	M	40	9 5	G, G	0 25
30	Scaphoid graft from tibia	26	M	5	2		0 4
31	Plating of tibia	64	M	5	5		1 0
32	,	49	M	5	2 5		0 5
33	GSW of foot	29	M	20	4		0 2
34	Hallux valgus	56	F	1	0 75		0 75
35	Bilateral hallux valgus	16	F	2	1 5		0 75
36	Lacerated fingers	32	F	1	0 5		0 5
37	Ulnar nerve trans plant	18	F	5	2 5		0 5
38	Excision of temporo mandibular cartilage	31	F	1	0 75		0 75
39	Excision of olecranon	63	M	4	2 5		0 6
40	Plating of humerus	49	M	8	10 5		1 3
41	Arthrodesis of wrist	21	F	8	4		0 5

SP = Smith-Petersen
V = vomiting C = cyanosis D = depression
H = hæmaturia P = prostration G, G = gas gangrene

Only in 7 cases of the 41 listed was the blood concentration at the end of 24 hours less than 0 5 mg per 100 c cm per gramme used In each case there was a reason for the poor absorption, and only these cases need separate comment

Case 28 and 29 were both of compound fractures of the tibia and fibula Muscles were severely lacerated, and in each the posterior tibial vessels were severed Circulation was impaired, and there was loss into the dressings In each, gas gangrene supervened on the fourth day, and intravenous sulphapyridine was then given as well as serum therapy In case 28 the limb had to be amputated, while in case 29 the infection was better controlled and the leg was saved

In case 33, traumatised muscle was again the tissue from which absorption occurred A gunshot wound of the foot, sustained through enemy action, caused shattering of metatarsals and much laceration of the small muscles Bone fragments were removed and the wound packed with sulphanilamide The skin was sutured As a result of trauma and destruction of vessels the circulation was reduced In addition, the peripheral site of the wound may have contributed to poor absorption

Case 17 was of an abscess in the flexor compartment of the stump of an amputation at mid thigh, carried out 7 years ago for osteomyelitis of the femur following a wound received in the war of 1914–18 The cavity was packed with 10 grammes of sulphanilamide and left open Drainage was free, and most of the drug escaped into the dressings The abscess in case 18 was an old one, with a dense fibrotic capsule, situated in the superficial fascia of the thigh The skin was sutured, so that the drug was retained, but rapid absorption was not to be expected

Absorption in cases 25 and 30 was from superficial fascia about half way down the leg In the former there was a laceration, about 7 in long, down to the deep fascia, in which the drug was placed *In the latter the site was that of a small* bone graft taken from the subcutaneous surface of the tibia

EFFECT ON HEALING AND INFECTION

While solid sulphanilamide is still present we may expect the fluids of the wound to be almost or quite saturated with the drug High concentrations in these fluids have in fact been observed by Jensen, Johnsrud and Nelson (1939) and by Hawking (1941a), who also makes the important point that the solubility of sulphonamides in water and salt solutions may give but a poor indication of their solubility in body fluids It is with this nearly saturated solution that the blood passing through the region of the wound comes more or less into equilibrium It follows that the rate of absorption should be fairly constant so long as the local solution remains practically saturated, which it does while solid remains When all the solid has disappeared, the rate of absorption should fall rapidly The significance of this is that the peak of the blood-concentration curve gives the approximate time at which solid sulphanilamide disappears from the wound This, as has been mentioned, has always been in less than 30 hours There is therefore no reason to anticipate any mechanical interference with healing from the presence of a deposit of powder This statement does not necessarily apply to other, less soluble and presumably less rapidly absorbed, sulphonamides In a few cases, some previous to the present series, wounds have been reopened 4–10 days after the first operation In no case has any trace of persisting sulphanilamide been found

We formed the impression that wounds treated thus heal a little more slowly but no less perfectly than similar wounds before sulphanilamide was used This is only an impression, the series being too short to provide evidence of statistical value The delay is certainly slight Hæmatoma formation seems more definite when sulphanilamide has been used Key and Frankel (1941) also report this Jensen, Johnsrud and Nelson suggest that it may not be undesirable The hæmatoma is a means of spreading the drug throughout the wound It is usually absorbed Sometimes a little brown fluid drains out when the sutures are removed

In no case in the series has a clean operation wound been found to be infected when exposed for removal of sutures Secondary infection after removal of sutures occurred in 3 cases

The results with infected and contaminated wounds have been satisfactory Contaminated wounds treated with sulphanilamide and primary suture usually heal by first intention Where pus has been present, it is sometimes possible to suture the skin after its evacuation and replacement by sulphanilamide, and to observe healing by first intention In granulating wounds, epithelialisation has been much more rapid than in similar wounds dressed with vaseline gauze alone

But this paper is hardly concerned with the question of whether or not the local application of sulphanilamide is sound practice in these various types of case Other series better suited to this purpose have been published The essential purpose of the *present paper is to indicate* to what extent the absorption of sulphanilamide is to be expected if it is applied locally

Before leaving the question of the control of wound infection, however, it should be emphasised that in two cases the local application of sulphanilamide, even in large amounts, failed to prevent the onset of gas gangrene In both of these cases the absorption was poor, as was the circulation in the injured tissues

SUMMARY

In 41 cases of traumatic and surgical wounds sulphanilamide has been applied locally The concentrations of the drug in the blood have been measured These have usually been of the order of 1 mg per 100 c cm for each gramme deposited in the wound In many cases local application alone will maintain an adequate therapeutic level in the blood, so that simultaneous oral administration is by no means always necessary Indeed with some wounds care is rather needed lest too much sulphanilamide be applied locally, and toxic effects result from free absorption

We wish to thank Mr G K McKee, assistant orthopædic surgeon to the hospital, for permission to publish these cases and for help in the course of the work

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THE JUXTAGLOMERULAR COMPLEX

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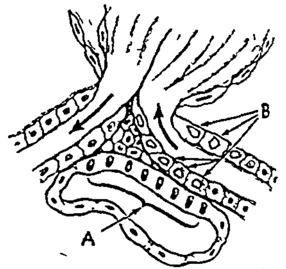
THERE are an increasing number of references in the published work on experimental kidney disease and hypertension to a structure termed the "juxtaglomerular apparatus" By this term we mean a group of apparently specialised structures in relation to, and including, the afferent and efferent arterioles of the glomerulus The term "complex" is used here in preference to Goormaghtigh's term "apparatus," since he restricts the meaning to the vascular and perivascular arteriolar structures The complex consists of (1) a specialised segment of the distal, or second convoluted, tubule (A in figure) placed in relationship with the renal arterioles, in the angle formed by the afferent and efferent arterioles at the root of the glomerulus, and (2) a part of the wall of the afferent arteriole (and sometimes the wall of the efferent) in its juxtaglomerular segment, where the ordinary fibrillar muscle cells of the media are replaced by epithelial-like cells in which granules have been described (B in figure), in addition to these afibrillar cells, nervous elements are said to be present

Zimmerman[24] first recognised the different appearance of the cells of the distal tubule most closely applied to the afferent arteriole in its juxtaglomerular portion In this part, the ordinary tubular cells seem aggregated, and become in some species much higher and more columnar Because of this grouping together of nuclei, and the impression of increased density of epithelial cells produced, Zimmerman called this the macula densa He was able to find such an arrangement in all mammals examined, but was unable to identify it in the other orders of animals Since the original description, a macula densa has been found in the distal tubule in all mammals observed,[1 6 11 13] and a similar tubule-arteriole relationship has been demonstrated in bird and amphibians[2] The aggregation of nuclei is not always present in the lower orders, or even in all mammals, so that alternative terms—such as "intercalated segment" or "epithelial plaque"[2]—have been suggested, but if the limitations of the term are remembered the applied segment of the distal tubule may as well be called the macula densa as anything else



Relationships at root of glomerulus A macula densa in wall of distal tubule B, afibrillar cells, in afferent arteriole

The structure can be made out as a rule in the routine hæmatoxylin-eosin stain, but it can be seen best if the Masson or another of the trichrome stains is used, with these the distal tubule stains differently from the proximal segment and despite the severe staining procedures the macula is usually left intact although the other tubular cells are injured to varying degrees Moreover if such a stain is used it will be realised that the tubule-arteriole relationship is a constant feature of every glomerulus examined and not of only a proportion, as has been stated[2]

One wonders immediately whether the arteriole beside which the macula lies is that supplying the nephron of which the macula is a part, or whether it is some other vessel It has been assumed that [illegible] rst alternative was true,[6,7] although proof was lacking By the study of serial sections of two human cases and reconstruction it has been possible to demonstrate that the distal tubule in which the macula densa was formed was continuous with a segment of tubule which came into contact with the glomerulus According to the studies of Oliver on the plastic architecture of the kidney this is the one nephron with the glomerulus about which the distal tubule arborises

Using the Altmann-Kull technique for the demonstration of mitachondria, Ruyter in 1925 saw granular, afibrillar cells in the juxtaglomerular portion of the afferent arteriole in the mouse[19] Oberling[15] saw similar cells in the same situation in the human kidney and this has been amply confirmed[1,2,6-8,9,10,11,12] Okkels[1-18] in 1929 demonstrated granular cells in the juxtaglomerular segment in the afferent arteriole in the frog Goormaghtigh[5] described similar cells in the same situation in the cat and rabbit and later[6] noted the relationship of these cells to the macula densa Various other species have been shown to possess the granular afibrillar cells[7,13] The chief concentration of the afibrillar cells in the dog and man, where they have been most studied, is in the juxtaglomerular portion of the afferent arteriole, but they are found also in these species in the subintimal portions of the interlobular arterioles and in several sites in the walls of the smaller arterial vessels[12] Afibrillar cells in the wall of the renal arterioles have been described by many workers[20] and several have lately assumed that these are the granular cells,[2,4] without having demonstrated the granules This may lead to error no less than the contrary assumption—for example, that by which the granular cells in the frog were not recognised by the technique used[2] and were therefore said to be absent

There are some appearances in the higher mammals by which the afibrillar granular cells can be recognised tentatively without the demonstration of the granules the nucleus is somewhat distinctive showing little chromatin, a rounded outline and often a prominent nucleolus , the nucleus appears larger than its fellows and there is a clear halo in the cytoplasm immediately about it But until the main features of the granular cells can be studied with the granules visible, it seems unreasonable to attempt their recognition without demonstrating the granules, especially in an organ like the kidney, where post-mortem autolytic change is so rapid and severe

When the granules are sought, the specimen should be obtained with the animal still alive but anæsthetised , the cat shows the granules most abundantly Even here the demonstration is not easy with the described technique The Masson stain is most used for the cat, dog, rabbit and man , and Goormaghtigh who is responsible for most contributions to the study of the granular cells, has described his technique in detail[12] Even in the cat, available techniques are not consistently successful in demonstrating the granules Modifications must be attempted with individual workers developing their own technique For the cat kidney I have used with success a preliminary deep staining with eosin (0 5% aqueous eosin for 5 min and the section decolorised to deep pink with tap water) followed by the usual Masson stain Goormaghtigh is also responsible for pointing out the existence of nerve-fibres and cells in intimate association with them Edwards[2] has confirmed this in several species and some incomplete work of my own seemed to show nerve-fibres in and about the terminal portion of the afferent arteriole in the dog kidney

REACTIONS OF THE JUXTAGLOMERULAR COMPLEX

The first description of an experimental alteration of the juxtaglomerular complex was that of Elaut,[3] who described hyperplasia of the afibrillar cells in animals made hypertensive by nerve section or carotid sinus techniques It is interesting in the light of later work that these changes were interpreted as an attempt at decreasing the shock of the raised blood-pressure striking the glomerulus Goormaghtigh in 1937 described selective damage to the fibrillar muscle cells, with sparing of the afibrillar granular cells, in 4 fatal cases of scarlet fever With Handovsky he later described similar selective damage from large doses of vitamin D in the dog Animals with hypertension showed an increase in the granular cells, sometimes at the expense of the fibrillar myocytes, from which they seemed in some instances to be formed It was suggested that these cells elaborated the pressor substance, and this view was supported by the finding that rabbits made hypertensive by the Drury technique showed hyperplasia of the afibrillar cells in the ischæmic kidney[8] , this has been confirmed by Dunihue and his associates[1] The ischæmic kidney of the Goldblatt dog showed also hyperplasia of the afibrillar cells[10] and on these data Goormaghtigh elaborated his theory of the endocrine nature of the afibrillar granular cells of the juxtaglomerular apparatus[11,12] Under the same conditions which produced these changes in the afibrillar cells, the macula densa was seen to undergo changes of a degenerative, vacuolar type

Since the description by Goormaghtigh concerning the complex in scarlet fever, there has been no published description of pathological reactions in the human kidney from this viewpoint Preliminary studies of my own appeared to show involvement of varying degree in some 30 cases of glomerolonephritis, with the greatest alterations in those cases which had, during their terminal illness, the least range of concentrating power Since, however, lesions in nephritis are inconsistent, these incomplete studies can be considered as no more than suggestive In the human kidney it was noticeable that one element of the complex—the macula densa or the afibrillar cells—rarely seemed to be affected without some change affecting the whole complex Thus in the more extreme cases the arteriolar wall was hyaline, the macula was swollen and hardly recognisable and there was, in addition, some hyaline connective tissue between the vessel and the tubule More careful studies may demonstrate lesions of one part of the complex, but the grosser affections of the complex alter all its parts It was this joint reaction of the arteriolar and tubular portions in man, and the similar joint action in the animal experiments described by Goormaghtigh, that suggested the term " complex " to signify the integral nature of the unit

ENDOCRINE ACTIVITY OF THE AFIBRILLAR CELL

The cycle of activity which Goormaghtigh has described for granules of the afibrillar cell[12] seem to indicate an endocrine nature, as he suggests Direct repetition of his work has not been forthcoming, and one must seek elsewhere for additional evidence Friedman and Kaplan[4] have shown that renin[21] can be extracted from the glomerular kidneys of the carp and dogfish but not from the aglomerular kidney of the midshipman fish The carp and dogfish are described as having aggregations of cells at the glomerular root resembling the juxtaglomerular apparatus These workers conclude that renin must exist in the glomerulus or glomerular arterioles and not in the tubules as Weeks[2-] has suggested This seems to be locating the hypertensive substance very close to the juxtaglomerular complex.

A second suggestive though indirect lead is furnished by the descriptions and illustrations by Weiss and Parker[23] of the entity which they term hyperplastic arteriolosclerosis , they saw this in their cases of pyelonephritis and glomerulonephritis and only in those which showed hypertension Histologically, it was characterised by cellular overgrowth of the intima of the small renal arterioles , and the picture described is in keeping with that which would be produced by hyperplasia of the afibrillar granular cells in these smaller vessels The evidence so far available to suggest the afibrillar cells as the site of the elaboration of the pressor substance is certainly not extensive , but what evidence there is does indicate how confirmation of Goormaghtigh's theory would help to settle some of the problems of kidney diseases

FURTHER LINES OF RESEARCH

Demonstration of the granules in the afibrillar cells is difficult The granules have been seen and photographed, so that their existence need not be denied , but newer staining techniques must be developed Each worker must develop a suitable means for making visible the granules of the animal used in experiment

Research on the juxtaglomerular complex need not be concerned with hypertension alone In the frog there is a well-developed complex with both the granular cells and the tubule-arteriole relationship represented Some experiments of the type of made by Richards might determine the condition in the distal tubule, whether chemical or hydrostatic, which affects the flow through the glomerulus Okkels[16] has shown already that it is at the site of the granular cells in the frog kidney that the afferent arteriole responds to mechanical stimulation by closing off the blood-flow through the glomerulus Comparative review of the known renal functions in the different orders of animals in which the juxtaglomerular complex has been described suggested to me that the complex was not concerned with the excretion of urea, uric acid, chlorides, sugar or non-protein nitrogen nor with the volume or dilution of the urine The common factor seemed to be the intermittency of flow of blood through the glomerulus, and it is possible that this is controlled, or regulated, by the juxtaglomerular complex

The reactions of the complex in human nephritis, no less than in the several experimental forms, will be of interest It may be necessary to cast off some of the terminologies which encrust the study of the kidneys, especially their pathology but pathological changes in the kidney will only make sense to the clinician when they can be interpreted in terms of functional change, and the most promising suggestion of such a possibility is found in the juxtaglomerular complex Kaufman[14] has lately described hyperplasia of the afibrillar cells in human cases of kidney disease associated with hypertension This seems like a start along one of the most hopeful lines for further research

SUMMARY

The juxtaglomerular complex is a group of apparently specialised structures in relation to, and including, the afferent and efferent arterioles of the glomerulus In the vessels, the ordinary fibrillar cells are replaced by afibrillar cells in which granules have been demonstrated in some species The afibrillar cells occur in the interlobular arterioles in some of the higher mammals A segment of the distal tubule of the same nephron as the glomerulus is placed close to the afferent and efferent arterioles and often there is a change in the character of the tubular cells adjacent to the afferent arteriole Nerve cells and fibres have been described with the vascular and tubular elements and there is some evidence to suggest that the intermittent blood-flow through the glomerulus is controlled or regulated by the juxtaglomerular complex

In experimental hypertension produced by renal ischæmia in the dog and rabbit Goormaghtigh and others have described hyperplasia of the afibrillar cells of the renal arterioles and this has been seen also in hypertension produced by carotid sinus techniques as well as hypervitaminosis D in the dog Recent work has strengthened Goormaghtigh's suggestion that the afibrillar cells produce a pressor substance, inasmuch as renin can be obtained from the glomerular kidney of the carp and dogfish but not from the aglomerular kidney of the midshipman fish In man, the process of hyperplastic arteriosclerosis, described by Weiss and Parker as being seen only in hypertension, would result from a hyperplasia of the afibrillar cells in the interlobular arterioles

The original work described in this paper was begun while assistant resident pathologist to the Johns Hopkins Hospital, and continued while resident pathologist to the New York Hospital, Cornell University Medical School Parts have been included in papers presented to the Ontario Association of Pathologists, 1940, and the Canadian Physiological Society, 1940, as well as to the Royal Society of Canada at the 1941 meeting

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POTENTIALITIES OF MUNICIPAL MEDICINE*

H JOULES, M D LOND, M R C P
MEDICAL SUPT OF CENTRAL MIDDLESEX COUNTY HOSPITAL

AN account of the development within the municipal hospitals under the most progressive authorities during the past twenty years would constitute a record of achievement unequalled in any hospitals previously As an example twenty years ago the titles of the wards of the Central Middlesex County Hospital were

1 Nursery	4 Female Workhouse
2 Aged Female Block	5 Female Feeble minded Ward
3 Female Infirm Ward	6 Female Insane Ward

These had their counter-parts on the male side One doctor acting as medical supt and master, served their needs Today this is an acute general hospital of almost 1000 beds with an admission-rate of 10,000 per annum and an outpatient department with over 100,000 yearly attendances A complete list of facilities now available would fill pages, but the following selection will indicate the increasing specialised services

1 A maternity block of 60 beds with antenatal and gynæcological wards of 50 beds, associated with appropriate outpatient departments

2 A dietetic department of 50 beds, a dietitian, special kitchen and outpatient department at which a chiropodist attends

3 A neuropsychiatrical department of 50 beds, associated with a mental observation unit of 16 beds with appropriate outpatient facilities

4 Two wards to which all cases of acute respiratory infection in adults are admitted for special investigation and treatment

5 A pædiatric department and outpatient facilities with cots for the admission of 100 children, but not fully occupied owing to war conditions

6 A neurosurgical department dealing with the major neurosurgery of the county

7 A genito urinary surgical ward and outpatient department

8 A tuberculosis department of 35 beds

9 A pathological department, staffed by two whole time pathologists and many technicians, with which is associated a medical artist †

10 A treatment centre for venereal disease, open daily

These departments are in the charge of members of the whole-time clinical staff, while certain other specialised work is dealt with by visiting consultants—e g , dermatologist, ophthalmologist, oto-rhino-laryngologist and physiotherapist A radiologist attends daily on a sessional basis The other large general hospitals administered by the county have developed along somewhat similar lines, dependant on the needs of the population served

Much discussion within the hospital and elsewhere has centred round the position of the medical superintendent, that bogy-man who is often said to be the complete bar to any reasonable hospital service In this hospital, with its weekly general medical staff meetings and monthly senior staff meetings, we try to discuss hospital problems and development in a spirit of cooperative helpfulness We are hopeful, too, that before long further modifications in the superintendent-clinician relationship will be officially recognised and that a more liberal administrative machinery will extend throughout the whole hospital

The possibilities for specialisation are thus increasing for all members of the senior staff, while a perspective is maintained by undertaking a share of the acute general work, medical and surgical, of the hospital Almost weekly meetings of the clinical and pathological staff have been a feature for several years now, while frequent, well-attended demonstrations to the practitioners of the area have been held

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* Based on the chairman s address to the Middlesex County Medical Society, Sept 11 1942 † See *Lancet*, Sept 12 1942 p 325

Much remains to be done particularly in respect to increased staffing, both medical and nursing , a recognition must come too, of the need for more than one senior physician surgeon and obstetrician in a hospital of this size Criticism is often levelled at our improving services on the score that nothing comes out of them, especially in medical literature The most important product is the ever-increasing stream of well-treated patients which should be the first criterion of a hospital s efficiency With increasing opportunities, increasingly valuable contributions to medical knowledge will be forthcoming

THE FUTURE

We have already in Middlesex specialist chest and neurological surgeons who are responsible for most of the surgery undertaken in these specialties Radium and X-ray therapy are centralised in one hospital Further developments along these lines must be encouraged The suggested formation of a clinical research society to work within the county hospitals opens up a vista of immense importance With effort and goodwill throughout research questions can be dealt with on a broad basis and on a wealth of clinical material which has not been collectively available anywhere in this country previously

Contact between the general hospitals, sanatoria and mental hospitals the county medical officer of health his assistants tuberculosis officers and those engaged in school maternity and child-welfare work, should be increased for therein lies the basis for the furtherance of true social medicine The establishment of chairs of social medicine in university centres is a necessary step but it would be deplorable if from the first we allowed this idea to pass into an academic retirement from which it might never emerge The place in which social medicine must flourish is within such an integrated service as we hope our county service is tending to become Problems needing solution will arise both centrally and peripherally, and it should be the function of our central organisation, working with the clinical research committees and all necessary medical auxiliaries, such as health visitors almoners and technicians, to find the answer to disease incidence throughout the county Often it will be found that social and working conditions are responsible for much that is preventable and it should be the duty of our public health administration so to stress these facts to the administrative body that preventive action must be taken Close association between hospitals, public health workers and the health centres in which practitioners will work, should be instituted as soon as the latter are established In this way we can rapidly form a body of health workers deriving strength from our unity

The facilities for both undergraduate and postgraduate teaching within such a scheme should be apparent Health problems of the whole area will be within its purview and it should be possible so to organise a clinical course that students do not get the impression that medicine consists of equipping oneself to undertake major operations on the thyroid gland or the stomach, or learning all about rare diseases to the neglect of the first principles of healthy living

Postgraduate lecture demonstrations both to and by our practitioners should be a regular procedure Education of the public in healthy living should go hand in hand with the increasing integration of the health service Encouragement should be given to the public to play its part in instituting healthy conditions both in their homes and their places of work A scientifically controlled health propaganda will not result in a morbid public

" Doctors forget the roots of disease which are often to be found in social conditions , they say that that is a matter for the medical officer of health Students are trained to deal with diseases but are not trained to look into conditions which prevail in factory and in the homes the conditions under which illnesses have arisen ' So said a member of Parliament in a recent debate Municipal medicine should have every incentive and facility to reverse this just accusation

Many of us will have been amused by the assertions of eminent authorities, who have never held whole-time posts, that a whole-time service such as ours prevents our appreciating the sacred doctor-patient relationship and that patients do not like " municipal robots " I am convinced of the falsity of this view Our daily contact with patients in the ward, as senior clinicians brings an intimacy and understanding which cannot be attained in a somewhat pontifical weekly teaching round A salaried medical service under a local authority such as ours has advantages which far outweigh any temporary loss of social prestige

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ADVANTAGES OF A SOCIALISED MEDICAL SERVICE *

SOMERVILLE HASTINGS, M S LOND, F R C S

THE state has provided a series of watertight compartments for the treatment of some diseases (tuberculosis, venereal diseases, cancer), and this has been arranged for the most part without any cooperation with the general practitioner who must inevitably first see the cases No scheme can be complete unless it includes the general practitioner, on whom must always depend the early and correct diagnosis of any case as well as its direction to the appropriate place for treatment

An extreme, but by no means unique, example of incoordination in health services is to be found in the facilities available for the mothers of London, who may be delivered by a LCC midwife or in the wards of a LCC general hospital ; by a borough council midwife or in the wards of a borough council maternity hospital (in some boroughs) , in the maternity ward of a voluntary general hospital or by a midwife attached to that hospital , by a maternity charity (either in hospital or by midwife) , by a midwife in private practice , or by a private doctor who may be doing much midwifery in a busy practice or be attending to but two or three maternity cases a year

The first necessity for an efficient health service is unification of existing agencies under a real Ministry of Health, which would be concerned exclusively with health matters in every department of state This ministry would of course have the duty of enforcing on local authorities the decisions of Parliament For efficient health administration the local authorities must themselves be large—much larger than most of those existing The country might be divided up into a dozen or more areas of administration each to consist of one or more counties with included county boroughs It would be best for each of these areas to be controlled by a popularly elected body which would deal not only with health but other local government activities as well On the health committee there should be room for the cooption of doctors and others who have made a study of health problems or had experience of health administration The final decision on all questions must however, be made by the consumer that is by the elected representatives of the people who must consequently be in a majority on all the main committees Some experience of health administration has convinced me that there are many intelligent laymen and women who have a much greater insight into health questions than many doctors would give them credit for

Though the administrative region for health services should be a large one, for practical working it should be subdivided into divisions of such a size that all the doctors in each, both general practitioners and specialists, should know each other and get used to working together The ideal unit or division might have a population of about 100 000 , and *the simplest unit to consider* is a small country town with the surrounding country district This would need a hospital of about 1000 beds near the traffic centre for almost every type of case, and the specialists attached to this hospital would also be available to see patients in consultation with the general practitioners or home doctors at the health centres or in their homes It will probably be convenient to have the main divisional health centre in close association with the divisional hospital, and here perhaps most of the cases referred by the home doctors will be seen by the specialists There will also be local health centres in urban and rural districts

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* Extracts from a lecture given to the Leicester branch of the Socialist Medical Association on July 31, 1942

Reviews of Books

Basic Concepts in Social Case Work

Herbert H Aptekar Chapel Hill University of North Carolina Press London Humphrey Milford, Oxford University Press Pp 201 *15s 6d*

This book could only have been written in America It illustrates the new trends and conceptions which are fundamental to good case work Those who recognise the value of psychiatric social work in this country will welcome a book analysing lines of progress in selected cases To many the social worker is still someone who gets something done—signs a form, arranges convalescence, finds a new house—much as a stenographer types a letter But the situation in which one person seeks help of a material kind from another is far more complex than this The extent to which the experienced social worker holds back from making up the client's mind may come as a surprise to those who are accustomed to her active and practical rôle Nor has she any fixed approach , the relationship is essentially a changing and a growing one The social worker " presents to the client the means for a partial or temporary solution and requires that she make a decision on this point The contact resolves itself into a kind of experiment in living, based upon the client's desire for, and the agency's ability to offer, a particular service " The phrase " an experiment in living " should go far to dispel the picture of the social worker as a kindly middle-aged woman arranging the lives of the poor Here, the newer conception has come to take its place in the regimentation of life necessary in time of war, and it can and should be used fully There is some irritating distortion of terminology in the book The terms are carefully defined, and follow the usage of Rank and the Pennsylvania School of Social Work, but psychiatric terminology is sufficiently complex without the use of personal interpretations of standard terms such as " projection " Occasionally the language is needlessly obscure, but incidental flaws should not dissuade the reader from a careful study of this newer dynamic case work

Schizophrenia

R S Ellery, MD, FRACP, psychiatrist to the Alfred Hospital, Sydney Sydney Australasian Medical Publishing Co Pp 170 *12s 6d*

An exuberant straining after fine writing and a rather clamant political outlook are what distinguish this book from many others which set forth what is known and what is guessed about schizophrenia Dr Ellery is convinced that environmental factors are of the first importance in the causation, and therefore also in the prophylaxis, of this illness " those who see man from the dialectic angle as an integral part of his environment believe that only through the operation of profound changes in this environment can a true prophylactic programme be achieved They hold that cultural forces may be more potent than biological tendencies, that economic pressure and social custom may be stronger than the ' diversity of genes ' said to be responsible for constitutional characteristics " Whatever may be thought about the dialectical angle of vision, the argument presented for this recurrent theme of the book is too deductive one would prefer more evidence and less assurance

The book is well produced and anything but dryasdust, beginners would find it stimulating but sweeping and not always trustworthy

The Medical Annual

Editors H Letheby Tidy, DM Oxfd, FRCP, A Rendle Short, MD Lond FRCS Bristol John Wright and Sons Pp 396 *25s*

This year the familiar annual is a little smaller, but perhaps not altogether the worse for that Contents, paper and illustrations, all are well up to the old standard The comprehensive subtitle—" a year book of treatment and practitioner's index "—lays on the editor a heavy task of selection, and the result is no chance collection of abstracts but articles from some 35 experts on their subject Many bear a direct relation to war medicine—for example, the pages on shelter hygiene by Lord Horder, on mass radiography of the chest by W E Lloyd, burns by C P Wakeley, war wounds by L Rogers and the sulphonamides by R Heathcoate The several hundred articles, long and short, are with few exceptions concisely and clearly written

The annual is essentially for those who want practical guidance but the research worker need not despise it References to original papers are numerous and there are 25 fine plates

Recent Advances in Obstetrics and Gynæcology

(5th ed) Aleck W Bourne, MB Camb, FRCS, FRCOG, Leslie W Williams, MD, MS Lond, FRCS, FRCOG London J and A Churchill Pp 363 *18s*

The style of this short readable book is more virile than that of previous editions Only those recent advances worthy of comment and assessment are included , thus three chapters found in the previous edition have been omitted and a much needed chapter on postnatal care has been introduced In discussing habitual abortion the authors rightly recommend progesterone, but propose that its injection should be continued to the 26th week of pregnancy, though there seems to be no evidence to warrant its continuance after the 14th week Nor is it clear that vitamin E—which is also recommended—has any influence on human abortion A plea that more general use of episiotomy in labours where the head is slow to emerge would help to abolish functional prolapse is perhaps rather a dangerous incitement to the surgically minded obstetrician , it is not desirable that episiotomy should become a routine manœuvre In the chapter on anæsthesia too little emphasis is laid on the need for adequate trained nursing care of the patient under twilight sleep Steele's technique for the use of ' Pentothal ' is not mentioned in discussing the use of the barbiturates during the first stage, and no mention is made of vinyl ether or cyclopropane for the end of the second stage, though either is to be preferred to ether or chloroform In the gynæcological section the chapters on carcinoma of the cervix epitomise the best teaching in British surgery sterility, leucorrhœa, sympathectomy, the sex hormones and ovarian tumours are particularly well discussed The book as a whole will be welcome to everyone interested in gynæcology and obstetrics

Diseases of the Blood and Atlas of Hematology

(2nd ed) Roy R Kracke, MD, professor of bacteriology, pathology and laboratory diagnosis, Emory University School of Medicine, Ga , U S A London J B Lippincott Co Pp 692 + xxx, 54 plates *£4 10s*

This revision of a standard American textbook is uneven The sections dealing with the white blood cells are first-class, the illustrations equal to anything yet produced, with specially good plates showing the odd types of leucocytes in glandular fever, and the various myeloblasts in acute leukæmia The section on leukæmia by Lloyd F Craver is complete and up-to the minute, even mentioning the therapeutic use of radioactive phosphorus compounds and the method of total body irradiation for lymphatic leukæmia Other good sections deal with malarial parasites, hæmoglobinuria, children's anæmias, and the blood pictures of common laboratory animals F P Parker contributes a comprehensive section on blood-groups and blood-transfusion But a new section on hæmoglobin and its derivatives is marred by the absence of illustrative formulæ, and the work of Fairley on methæmalbumin is not mentioned

Useful smaller sections deal with such matters as the differential platelet count, and hæmophilia and its inheritance and the value of globulin fractions in treatment , a frank table puts in their place the various liver extracts available on the American market The section on technique is complete and straightforward In the sections on anæmias and the morphology of the erythroblasts the author seems to be confused by the various terminologies, and it is strange that no coloured plate should show the changes in the sternal marrow smears induced by liver treatment in pernicious anæmia—one of the most informative demonstrations in hæmatology But the book will certainly find its way into our libraries if only for the excellent leucocyte plates

THE LANCET

LONDON SATURDAY, OCTOBER 3, 1942

RUSSIAN VICTORIES IN SOCIAL MEDICINE

IN 1920 Dr L Haden Guest, accompanying a British Labour delegation, gave a picture in our columns[1] of social conditions in the USSR and of the immense task then facing Prof NICOLAI SEMASKO, the people's commissar of public health The Czarist regime had left a grievous legacy and the political upheavals which followed the revolution had made it impossible to get supplies of even such elementary public health equipment as dressings and soap Quinine was so scarce that there was hardly any in the whole Volga region, and there were only 17,000 doctors for a population of 125 million, their work had to be supplemented by that of 35,000 partly qualified medical assistants and 120,000 juniors presumably equivalent to clinical clerks and dressers In the eight months before July, 1919, 1,299,262 cases of typhus were registered, with a death-rate of 8–10% In Astrakhan during the same year there were 600 cases of cholera and mild amœbic dysentery, and on June 7, 1920, when Dr Haden Guest was there, about 70% of the populace had malaria (no quinine) and the hospitals contained 642 cases of scurvy, 14 of typhoid, 306 of relapsing fever, 6 of smallpox and 196 of typhus Typical syphilis rates at that time were 156 per 10,000 in Petrograd and 123 in Olonets, Professor SEMASKO agreed that 80% was a fair estimate of the incidence of "custom syphilis" found in some South Russian and Ukrainian villages This was due largely to the traditional customs of kissing at Easter, kissing the ikon, feeding babies on chewed bread and using a common cup Now, after twenty-two years, Professor SEMASKO is able to look back on his remarkable handiwork He does so too modestly in an article lately received by the Anglo-Soviet Medical Council

The chief weapon against social diseases has been the dispensary Russian dispensaries differ from those elsewhere in being completely organised for prophylaxis as well as therapy They provide free medical service, but also supervise measures to suppress disease and prevent its propagation Thus the staff of an anti-tuberculosis dispensary treat the patients, inspect their living conditions, ensure proper nutrition, and send those who need it to hospitals and sanatoriums, they also inspect the families of patients, especially the children, and fortify them against infection as well as they can by improving their health The result has been that in Moscow and other large cities tuberculosis decreased by more than half between 1926 and 1937 The anti-venereal disease dispensary must not only give free treatment but track down the source of infection, and treat the responsible patient If necessary, treatment can be made compulsory Doctors and nurses pay home visits if need be to ensure regular treatment Thanks to the treatment of pregnant women, congenital syphilis is now rare Prostitution has disappeared with the ending of unemployment—its main cause—but years ago the dispensaries had to work with the police to stamp out centres of prostitution Women were placed in prophylactoriums under supervision and were taught socially useful work, while receiving whatever treatment was necessary Many of them later became well adjusted and were able to take a normal place in society The number of such institutions has steadily decreased and recently they have hardly been needed though two or three were still maintained before the war Custom syphilis has vanished with the harmful customs which caused it, and in Moscow primary syphilis is so rare that the professors have difficulty—as they do here—in finding cases for demonstration to students

Housing had been improving steadily up to the outbreak of war, both in town and country districts Hours of work had been shortened and regular rests and holidays had been ensured The health of the people had further benefited from safety devices and cleanliness in factories, and the standard of living had risen very much Tuberculosis as an occupational disease has been disappearing as a result The marriage-rate in 1938 was 5% higher than in 1937, and divorces had fallen by 47% as compared with those of 1936 The law passed in 1936 prohibiting abortions also provided every kind of assistance to parents in bringing up their children, as well as new creches, kindergartens, and children's homes

German invasion of Russian territory has brought the usual ills of war in its train Women have been violated, brothels opened, and hospitals and prophylactic centres destroyed But in unoccupied districts the work goes on as before, and the medical services to the Forces are in themselves a great achievement

PLANNED NUTRITION

THREE centuries ago THOMAS MOFFETT advised that diet, though called a frivolous knowledge by the impudent and a curious science by the imprudent, should be embraced "as the leader to perfit health and a sound body" The impudent and imprudent are still to be found, even in our profession there are faddists of the back-to-Nature breed who would have us subsist on berries, there are scientists in arm-chairs who would have us eat rotted liquid herrings because laboratory analyses show them in that state to contain more nutriment The nutrition of the body cells, on which the nutrition of the population ultimately depends, may falter, rarely, through an insufficient supply of oxygen or inadequate removal of waste products, it suffers commonly through failure to ingest the right foods, because of ignorance of what the right foods are, unsound cooking that makes them unappetising and destroys essential nutrients, or most likely because the right foods are unavailable for economic or other reasons A successful food policy must therefore ensure that the existing supplies of food are available and that they meet the nutritional requirements of the people The first is broadly the concern of the Ministry of Food, the second of the Ministry of Health Lord WOOLTON has made a fine job of making the food from our farms and from abroad available to 47,500,000 people each day, in the face of demands for economy in shipping-space and the dispositions of U-boats But can we agree with his statement made a year ago that there is no sign of malnutrition in Britain ?

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[1] *Lancet*, 1920, ii, 518, 566, 617

It is only in the last few years that methods have been devised for assessing the nutriture of samples of the population The Ministry of Health was slow to adopt those methods and until recently relied on the reports of its medical officers of health and the results of the clinical assessment (or "glance method ") of the Board of Education—a method now largely discredited Sir WILSON JAMESON, however, has been quick to apply the newer knowledge of nutrition A year ago he defined the necessary technique as a combination of dietary survey, laboratory control and clinical examination[1], at the beginning of this year he announced that such surveys were being made by the Ministry, and their value has been stressed by Prof J C DRUMMOND[2] Dietary surveys, though they have played an honourable rôle in the past and will continue to be useful for limited purposes, are now having premortal paroxysms (" one can hardly take a mouthful without someone wanting to weigh it ") Most of their results are of relatively trivial value, for the method teems with inaccuracies owing to insufficient data on analyses of foods, losses in cooking and plate-waste The relative value of laboratory control and of a clinical examination can best be appreciated by recalling the sequence of events in the development *of nutritional deficiency in man* The ingestion of food inadequate in a specific nutrient, whether or not detectable by the dietist, usually leads to a fall in the concentration of that nutrient in the blood That fall may be detected by biochemical methods before any *ill health occurs* The fall continues and when the function of certain cells becomes impaired there is vague ill health with decreased efficiency, both bodily and mental, this may be detectable by physiological methods, such as the measurement of dark-adaptation Later—usually much later—the earliest structural changes occur and can be detected by refined clinical methods, terminally a disease such as scurvy appears We can therefore apply to the population filters of graded pores for sifting the malnourished from the fit The finest filter is the analysis of the blood, the coarsest is the diagnosis of textbook deficiency diseases (rickets, scurvy, xerophthalmia, beriberi, famine œdema) But blood analyses are difficult—even hæmoglobin estimations are not straightforward The intermediate grade of *refined clinical methods provides a sieve of treacherous* value, for the early signs and symptoms are unspecific —follicular hyperkeratosis is not always or even often due to deficiency of vitamin A, nor gingivitis to deficiency of vitamin C The slit-lamp microscope is a great help, but if the sweeping claims are correct that KRUSE[3] makes for its use in diagnosing deficiency of vitamin A by examining the conjunctivæ, of vitamin C by examining the gums[4] and of nicotinic acid by examining the tongue,[5] then we are almost all deficient and someone should start a crusade in quest of the normal man These methods, biochemical and clinical, having been used throughout the population, critical evaluation and supervision must be applied to them By the results of such critical surveys, existing nutritional deficiencies and downward *nutritional* trends can be discovered, ill health anticipated, and the food situation remedied That is medicine—preventive medicine The diagnosis concerns the Ministry of Health, the therapy the Ministry of Food But those are not the only official bodies interested The cooperation of the Ministry of Agriculture is essential, and the Board of Education is clearly concerned There are problems of transport, of commerce and above all of economics, for food merely rots if the people cannot afford to buy it And there are problems of education, to teach the people the right foods and the right ways of preparing them The problems, therefore, though primarily medical, stretch wide, and need a central organisation —a Nutrition Council—to control them

There is no existing organisation that can coordinate all these varied interests The Medical Research Council has done admirable pioneer work in the field of nutrition, particularly animal nutrition Its Committee on Human Nutrition, which last met a few years ago, before the war, would doubtless be strongly represented on such a council So would the Armed Forces, and in that way greater efficiency would be produced by coordinating research (recently the possibility of a particular vitamin deficiency occurring in the Forces was investigated by each of the three independently and differently without any collaboration) Other countries have set up such councils For instance, the Canadian Council on Nutrition is a voluntary advisory body formed in 1938 with the deputy minister of pensions and national health as chairman, its executive committee consists of the five members of the subcommittee on nutrition of the *Dominion Council of Health, and of the nine* members of the scientific advisory committee of the Dominion Council of Health, and it has 32 additional council members Further, it incorporates the central federal office for nutritional work, which is called Nutrition Services, and is deeply concerned with education in food matters Such a Nutrition Council should be official, but only its executive committee should be concerned with policy and should therefore include representatives of the Armed Forces, the other council members should coordinate and advise The final report of the mixed committee on nutrition of the League of Nations called attention in times of peace to the wide prevalence of malnutrition, and pointed out that the movement towards better nutrition had been largely the result of the unconscious and instinctive groping of men for *a better and more* abundant life, what is required is the conscious direction of the natural tendency towards better nutrition Such direction constitutes policy which requires the guidance of some central authority The committee said " We are more than ever convinced of the necessity for bringing together scientists, economists, agricultural experts, consumers' representatives, teachers and administrators in National Nutrition Committees It is our firm belief that through National Committees the most useful progress can be made One of the most important tasks is to ascertain the prevailing food-consumption habits and nutritional status of all sections of the population " If the need for such a council existed in peace, it is more dire now If it existed in 1937, when methods of assessing nutrition were scanty, it is greater now when such methods have been elaborated and refined If it existed when nations were isolated, it is vaster now when the nutrition councils of the United Nations could work together in feeding their peoples during the war the

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1 *Amer J publ Hlth*, 1941, 31, 1260
2 *Lancet*, 1942, i, 625
3 *Publ Hlth Rep Wash* 1941 56 1301
4 *Milbank mem Fd Quart* 1942, 20, 290
5 *Ibid*, 1942, 20, 262

tricken peoples in the famines after it A new desire o join forces has infiltrated nutritional scientists but hey must perforce work alone without knowledge of what others are doing, even the ministries are out of contact with much of the work Now is the time when all bodies interested in nutrition should be coordinated with the Ministry of Health, through a Nutrition Council, to abolish unnecessary duplication, prevent confusing statements being issued to the public and further a national nutrition programme that will ripen to an international food policy

MEDICAL HAZARDS OF AIR TRANSPORT

REPORTS from the Libyan campaigns show that as air superiority was gained, air transport for the wounded came to be more often employed Little has been made public about the indications, or what is more important the contra-indications for such transport out there LOVELACE,[1] of the Mayo Clinic where a special aviation laboratory has been established, has assessed some of the contra-indications He points out that in the normal person anoxæmia begins and oxygen administration becomes necessary at about 10 000 feet In the anæmic patient the effects of oxygen want will be felt at lower altitudes, for there is less hæmoglobin available to carry the oxygen The anæmic patient should therefore have oxygen administered in flight even at low altitudes He considers high altitude flight in the pneumothorax case particularly dangerous He reminds us of Boyle's law, whereby if the temperature remains constant the volume occupied by a given sample of gas is inversely proportional to the absolute pressure under which it is held Thus with ascent, as the atmospheric pressure falls the volume occupied by a pneumothorax increases, and at a little over 15,000 feet is actually doubled—even at 10,000 feet there is an increase of 1 5 times in volume Air transport of the closed pneumothorax—whether artificial, spontaneous or traumatic—is therefore risky, and may result in respiratory embarrassment and rupture of pleural adhesions The deep-sea fish, with his closed swimming bladder never ventures far up into shallow waters LOVELACE and HINSHAW[2] have shown that the onset of unpleasant symptoms is to some extent governed by such factors as fixities of the mediastinum, thickness of the visceral pleura and the degree of the negative intrapleural pressure at the start of the ascent This specialised aspect of the subject is not so important in war as it will be afterwards when commercial air travel is likely to assume a larger place in our lives

The air of mediastinal and subcutaneous emphysema is subject to similar pressure changes, and LOVELACE considers that the same physical principles apply to the volume of gas in the stomach and intestines and, in the case of the wounded, that with ascent the recently sutured bowel may be blown and leak In intestinal obstruction this increased distension may be disastrous He suggests that in such cases it will be of advantage to maintain continuous suction by means of a duodenal tube, or perhaps even better a Miller-Abbott tube In cases of cerebral injury or laceration he quotes evidence to show that oxygen is early needed, and that with ascent there is an increase in intracranial pressure An experiment in support of this contention was done by WALSH,[3] on a woman of 35, who had had a temporal decompression for focal encephalitis diagnosed in error as a cerebral tumour A small metal mast was fixed with some collodion to the scalp over the defect and its movements recorded with the patient in a low-pressure chamber Atmospheric pressure was reduced to imitate an ascent to 28,000 feet The mast pointer rose 1 cm, and the scalp, formerly depressed, now bulged out WALSH and BOOTHBY have also shown that on ascent to 28,000 feet intraspinal fluid pressure on lumbar puncture rises 30 mm of water The reason for this increase in intracranial tension is not yet determined, and WALSH points out that it may be due to expansion of air in the ventricles, or to alteration in the blood circulation or the amount of cerebrospinal fluid

It is of course unlikely that altitudes of 28,000 feet will be used for the air transport of wounded But JESSE WRIGHT[4] of the United States Navy hopes it will be possible to provide some special ambulance planes with sealed cabins to maintain atmospheric pressures near those of sea level The Germans have been aware of these hazards, and HIPPKE,[5] their chief of air medical services, reports that during the Polish campaign the pilots of the air ambulances were instructed not to fly higher than 3000 feet As far back as 1937 the Germans were transporting wounded of the condor legion from Spain via Italy by air The weather was not so favourable there as in the bright summer of the Polish campaign It was found that local ground visibility and choppy weather made rapid ascents to 12,000–15,000 feet essential, and this has to be borne in mind in assessing transport risk In the Polish campaign HIPPKE reports that 2500 sick and wounded were carried, and he says that although prolapse or pressure symptoms are theoretically to be expected in cerebral or abdominal gunshot wounds they met with none, he considers that plasters and covering dressings may be sufficient to prevent them He is not sure about thoracic injuries, and some of the patients did die en route Shock, "inclination to shock," and severe anæmia he regards as the only contra-indications to air travel He says that the Germans intended to develop as an air ambulance the Fieseler-Storch plane which starts and lands easily in small fields A large plane needs a large landing field, and much of the value of air travel is likely to be lost in the long ambulance journey required to reach it

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[1] Lovelace, W R jun *Proc Mayo Clin* 1941 16 221
[2] Lovelace W R jun and Hinshaw, H C *J Amer med Ass* 1942, 118 1275
[3] Walsh W N *Proc Mayo Clin* 1941, 12 220
[4] Wright J G *U S Navy med Bull* 1942 40 143
[5] Hippke G E *Dtsch Militärarzt* 1940 5 1 Translation in *Milit Surg* 1940 86 439 See also Kowalzi G H *Ibid* p 565

TUBERCULOSIS IN SWEDEN —After a period of regression between the two wars the number of tuberculosis cases in Sweden is once more increasing and the health authorities have launched a nation wide anti-tuberculosis *campaign* Mass radiography of large population groups and BCG vaccination are the foremost measures suggested In the first place everyone who has to do with children, passenger traffic and foodstuffs, should be subject to these precautions which would later be extended to women and adolescents in industry Between April and June this year 85,000 officers and soldiers of the Swedish defence forces were X rayed, and, so far, 15,000 soldiers have been BCG vaccinated The Swedish National Anti-Tuberculosis Union has also started an examination of the people in the northern parts of the country where tuberculosis is common The examination is done in a specially constructed X ray bus, where up to 100 people can be examined in an hour

Annotations

DIAGNOSIS OF BREAST TUMOURS

THE wealth of pathological material received for diagnosis at the Royal College of Physicians in Edinburgh provides an opportunity for checking diagnostic methods The service has already been used for the benefit of systematic pathology in a series of articles on debatable *tumours in human and animal pathology*[1] A further contribution has now been made by Dawson and Harvey[2] with the object of correlating the macroscopic and microscopic diagnosis of mammary cancer The results of the two methods of observation are in such close agreement that they suggest a practical application to war time conditions War of necessity reduces peace-time standards not only of living in general but of medical practice also Pathological services, like all others, are working with reduced personnel and materials There appears to be justification in the results recorded for sacrificing much time consuming microscopic technique in favour of macroscopic diagnosis Of 95 cases in which radical and modified radical mastectomy was performed, the macroscopic diagnosis was correct in 94, of 35 cases of simple mastectomy, diagnosis was correct in all 35, of 79 local excisions or biopsies 73 were correctly labelled, and of 48 doubtful cases only 4 were incorrectly diagnosed It appears from the first two sets of figures that not only were the pathologists almost always right but the surgeons also, for the correct method of dealing with the tumour had been chosen at operation It looks as though the surgeon should only send for microscopy those breast tumours about which he is doubtful

THE THREE-IN-ONE DOCTOR

IN a recent issue of the *National Insurance Gazette* the story is told of a member of an approved society who believed himself to be suffering from an industrial disease, and went to be examined by the certifying surgeon, " only to find that that gentleman was his own panel doctor and also the works doctor " The man was certified in March of this year as suffering from myocardial degeneration In May he went into a hospital, and when his wife visited him she noted that his chart was marked " Lead normal " This being reported to the man's society, it was ascertained that he had been employed for a number of years as a maintenance fitter in a red lead plant The man was then advised to see the certifying surgeon who issued a certificate to the effect that he was not suffering from lead poisoning (" He could hardly, as panel doctor, give a certificate for myocardial degeneration, and as certifying surgeon give one of lead poisoning ") Next the man applied for examination by a medical referee, who certified him to be suffering from lead poisoning, and back dated the certificate to the first day of incapacity His employers then sent him to be examined by a specialist, who turned out to be the doctor who had been in charge of his case at the hospital The story concludes " Had the member's wife not seen the wording on the hospital chart and had she not made a report to us, the member would have gone on being certified as suffering from myocardial degeneration But what is the position of a medical man who is panel doctor plus works doctor plus certifying surgeon? And does he at any particular time serve the interests of the patient or the employers or act as an independent representative of the state?" The obvious moral of the story is the ease with which a case note can mislead an anxious relative and the significance of a diagnosis elude an earnest official The " lead " of an electrocardiogram unfortunately has the same spelling as " lead," the metal In any case it is possible for a patient with lead poisoning to have myocardial degeneration as well But the real moral lies deeper It is surely all to the patient's good to have the same doctor supervising him at home and at his work, and it seems the ideal solution to combine in one person the panel doctor, the works medical officer and the examining surgeon This would obviously simplify the difficulties discussed on p 405 But the man's union sometimes fears that a doctor paid by a firm would be prejudiced against the workers This is not the experience of those who know the high standard of fairness and impartiality shown by works medical officers and examining surgeons If their decisions can be said to have a bias, it is on the side of the workers—which seems natural enough in a profession whose training and experience give them a high sense of human values The doctor patient relationship is something apart It may be that the individual worker is more conscious of this than those who represent him

BIRMINGHAM BROADSIDE

IN a clear and soberly written little book prepared for the Birmingham Social Survey Committee (*Nutrition and Size of Family* Allen and Unwin 2s 6d) Mrs M S Soutar, Dr E H Wilkins and Prof P Sargant Florence present, somewhat belatedly perhaps, the results of an investigation into food expenditure carried out during April–August, 1939 The inquiry was limited to families with one or more children living on a new housing estate (Kingstanding) about 5 miles from the centre of Birmingham Information was collected from 269 families, the object being to ascertain the extent of poverty in families and the comparative conditions of life in families of different sizes No attempt was made to inquire into the composition of family diets—always a difficult matter when housewives have to purchase in pennyworths and consumption is often straight out of the paper bag

The degree of sufficiency of income was determined in two ways (1) by comparing net income (i e, total income less rent, compulsory insurances and fares to and from work) with an assumed minimum standard of expenditure on food, fuel, light, clothing and cleaning materials, and (2) by comparing with a minimum standard of expenditure on food the *balance out of housekeeping money theoretically available for food,* after paying the assumed minimum on non food items in (1) plus voluntary insurances and regular hire purchase instalments In the first approach—which we should today describe as the unrealistic method—the minimum diets set up by the BMA in 1933 were used Diet No 2 (repriced to 7s 8d for an adult male) was used without alteration and for other expenditure the standards set up by the Bristol Survey[1] were closely followed The application of this conventional approach showed that 14% of the total families on the estate were on the borderline or below sufficiency Of the families studied the proportion in each group on or below the " needs " standard were with one child 3%, with two children 11%, with three 27%, with four 55%, with five 60%, and with six or more 82% This is indeed a relentless gradation even on a standard which allows an inadequate quantity of milk, fails to recognise the protein needs of adolescents, disregards the needs of heavy workers, ignores illness and rests on the assumptions that furniture costs nothing and lasts for ever, that no one pays voluntary insurance or doctor's bills, or spends anything on holidays, recreation or amusement, and that all the people concerned are non smokers, teetotallers and do not read newspapers

But the promoters of the survey were not satisfied, they realised that they were dealing *with human beings,* so they set out to ascertain the amount which the bread

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1 Harvey, W F, Dawson, E K and Innes, J R M *Edinb med J* 1938, 45

2 Dawson, E K and Harvey, W F *Ibid,* 1942, 49, 401

1 The Standard of Living in Bristol Preliminary report of the work of the University of Bristol Social Survey, B 1938,

winner gave the housewife as housekeeping money and they then compared the cost of the standard minimum diet with the money apparently available for food It is in this section that the book is most original and valuable The results of the method showed that 31% of the total families on the estate were below sufficiency Of the families studied the proportion in each group below sufficiency were with one child 13%, with two children 45%, with three 65%, with four 85%, with five 96%, and with six or more 96% Ascertainment of the proportion of all the 8150 children on the estate inadequately provided for disclosed that 31% were on or below the borderline of sufficiency by the first measure and 60% below by the second and more realistic measure Actual poverty, as shown by the housekeeping balance available for food per man, is much greater than that shown by the type of measurement usually adopted in social surveys The investigation illustrates, as the York, Bristol, Liverpool, Sheffield, London and other surveys have done, the financial inability of many working class families to maintain for their children a standard of living compatible with full growth and health What is particularly significant about this survey is that it relates to a "prosperous" period, there was very little unemployment, overtime was common and "most of the gardens are well kept, the hedges neatly trimmed, and there is a general external air of prosperity"

Apart from the original things this book has to say on gardens, parlour type houses, purchasing habits, irregularity of income, the burden of hire purchase and voluntary insurance payments (past insecurity and future uncertainty) there is one important message—in which the hand of the late Dr M'Gonigle can be seen—for those concerned with planning the postwar world All the families on the estate had been rehoused and this involved an all-round increase in the cost of living, significantly, the proportion of bread in the diet rose after rehousing It is clear that as an independent social reform rehousing has its limitations It may be ungrateful to ask for more from the authors of such an excellent and understanding piece of work but we should like to know how the conditions of today compare with those of the summer of 1939

SUDDEN DEATH IN INFANCY

WHEN an infant who seemed well is found dead in its cot or pram it is natural to presume that it has been suffocated by its bedding or has died of foul play Thelin[1] has urged that the conclusion should not be drawn hastily—never on external findings alone and only with great care after autopsy From the scanty published work on the subject we know that "acute suffocating catarrh"[2] or "acute bronchiolitis"[3] may commonly cause unexpected death in infants, and, what is more important, may run the most fulminating course to end fatally in as little as 12–18 hours,[4] during the early part of which nothing untoward is noticed A child may seem normal to its mother when fed and placed in its bed or pram, only to die asphyxiated in its own inflammatory bronchial fluids during the quiet breathing of sleep when the cough reflex is dulled and secretions accumulate A vicious circle is set up, in which congestion and œdema and even acute congestive bleeding into the lung take place, completing the closure of the air-passages Convulsive movements of anoxic kind may disturb the bedding or turn the child over, and some mechanical interference with breathing may follow With these several factors operating together difference of opinion as to the precise causation of death may arise Thélin, from a somewhat confined experience of 30 cases in the medico-legal institute of Zurich, claims to have dissipated all suspicion of accident or foul play by finding inflammatory secretions causing asphyxia in no less than 20 and a large thymus (with the conventional apologia) in a further 3, leaving only 7, say one out of every four, in which asphyxia from external causes, suffocation by bedding or foul play was responsible for death Unfortunately Thelin shows a serious disregard for microscopy and histological confirmation of the nature of the process Experience of asphyxia autopsies quickly teaches one that never with the eye alone is it safe to judge the nature of the process which fills the airways and precipitates death, never, unless frank yellow pus is present, is it safe and proper to attribute death to natural causes The bronchial fluid must be microscoped, nothing can take the place of this essential scientific proof, and without it we must still form the view, however unwelcome, that accident in the bed, the bedding or the nightclothes was responsible For proof of a criminal act we must have, in addition, some well defined marks to show its nature, without these we may have our suspicions but we cannot act This distinction between natural disease and accident is a matter only of care and patience, caution in microscopy of fluids would be likely nearly to reverse Thelin's figures His remark that his figures represent "the view of all those who have occupied themselves with the problem" is unfounded, it does not represent English experience

SPITTING AND EXPECTORANTS

THE facility with which the lung absorbs fluids presumably has some influence on the amount of sputum coughed up, and hence a bearing on the action of expectorants Basch, Holinger and Poncher[1] have observed the physical and chemical properties of sputum in two patients with bronchiectasis Specimens of sputum were obtained by bronchoscopic suction and the observations included estimations of the organic and inorganic contents of the samples and the viscosity of the sputum They distinguished three different types of sputum in the bronchial tracts of these patients (not to be confused with the three layers into which bronchiectatic sputum separates on standing) The first type is a bronchial mucus plug, rarely seen because often lost during the cough, with a high viscosity and low content of organic and inorganic material The second type occupies the trachea and larger bronchi, and is subject to considerable fluctuations in viscosity and content of solid matter, it derives from the third type of sputum, which, lying in the most dependent part of the lung, is very viscous with a high content of organic and inorganic substances, this is never coughed up but is liable to ascend to the larger bronchi as a result of such forces as the tussive squeeze Basch and his colleagues conclude that the differing viscosities of the sputum depend on reactive processes within the bronchi, and that changes resulting in dilution may take place by the secretion of liquid substances into the sputum, by resorption of solid substances from the sputum or by bacterial or enzymatic liquefaction The traditional use of expectorants is based on the assumption that these drugs liquefy the secretion and hasten resolution by facilitating absorption at the alveolar surface The limited amount of experimental work on this subject has been reviewed by Alstead[2] By measuring the daily output of sputum during a control period and after the administration of expectorants, he was unable to confirm the orthodox view that these drugs increase the output of secretion Basch and his colleagues reject the method of measuring and weighing expectorated sputum, partly because they consider it inaccurate and also because it does not take

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[1] Thélin M H *Schweiz med Wschr* 1942 72, 309

[2] Cathala J, Anzepy P and Brault A *Rev franç Pédiat* 1938, 14 105

[3] Hubble J and Osborn G R *Brit med J* 1941 i 107

[4] Shope R E *J exp Med* 1934, 49 60, 49

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[1] Basch F P Holinger P and Poncher H G *Amer J dis Child* 1941 62 1149

[2] Alstead S *Lancet* 1941, i, 308

into account the possibility of resorption of sputum under the influence of expectorants From their own observations on sputum, collected under supervision or by bronchoscopic suction, they conclude that expectorants given "at regular intervals day and night in the usual dosage" do lower the viscosity of the sputum Their results must be discounted to some extent, however, because in about two thirds of their experiments figures for viscosity are either omitted or show differences which having regard to the method employed are probably not significant Viscosity charts covering a period of two or three weeks would have been preferable to single readings, since it is essential to obtain some idea of the spontaneous variations found in the course of an exacerbation of bronchitis untreated by expectorants If the fluctuations are as great as those in the volume of the daily output of sputum a liberal allowance must be made before alterations in viscosity are attributed to expectorant drugs or other measures Basch and his colleagues report favourable results from ammonium chloride, potassium iodide, senega and ipecacuanha, and steam inhalations were even more effective than expectorant drugs Inhalations of carbon dioxide lowered the viscosity of the sputum considerably Oxygen had the opposite effect, but with mixtures of the two the action of CO_2 predominated They therefore regard CO_2 as an expectorant because it liquefies the sputum, stimulates the cough reflex and favours resorption Research on expectorants in the human subject might profitably combine serial observations on the viscosity and the daily output of sputum That it is possible to affect the volume of the pulmonary secretion by pilocarpine and atropine is beyond dispute but these drugs are practically useless in the treatment of bronchitis on account of their intolerable side effects Nor are drugs that have a beneficial action in the bronchial tract when given in dosage provoking nausea likely to find favour among patients The point in dispute is whether non-nauseating doses of the expectorants, given —as they usually are—when the stomach is full of food, can cause liquefaction of the sputum If liquefaction of the sputum and diminishing viscosity can be effected by these drugs in spite of a downward trend in the daily output of secretion then we must revise our definition of the term "expectorant" Otherwise the student will be asking "when is an expectorant not an expectorant?"

A GREAT ENCYCLOPÆDIST

J P writes Carl Oppenheimer was a remarkable man springing from a remarkable family When Chief-Rabbi Oppenheimer of the Oranienburger Synagogue in Berlin gathered his family on a Friday evening for the sabbath supper, there would be Franz, the eldest, the famous professor of economics Paula, the elder daughter who was famed for her fairy tales and children's books, with her husband Richard Dehmel, a Poet Laureate of Germany Then the younger daughter with her husband Steindorf, the celebrated Egyptologist, and lastly the Benjamin of the family Carl, biochemist and medical author Carl Oppenheimer's name is not connected with any great research or invention, his talent lay in compilation he was a medical chemical encyclopædist of the highest rank His little book *Ferments and their Actions* published in 1905, developed into the *Handbuch*, known to all biochemists, which will remain a standard work He was able to simplify even such complicated studies as Wieland's dehydrogenation theory and Warburg's theory of oxidation by catalysis, and he brought order into the bewildering nomenclature and classification of enzymes He published accounts of the development of this specialised branch of knowledge in *Enzymologia*, and, not content with this gigantic task, undertook in 1909 to edit the *Handbuch der Biochemie*, which he completed in two years, later he prepared new editions as they were needed He also edited the *Zentralblatt fur Biochemie und Biophysik*, the *Tabulæ biologicæ* and the *Tabula biologica periodica* His interest was by no means confined to biology, few textbooks have had a popularity comparable to that of his *Textbook of Organic and Inorganic Chemistry*, which ran into 15 editions Yet he did not seek a serious environment I don't think any social club could have been more gay, more sparkling with wit and laughter than the laboratory of our great teacher N Zuntz, where I was fortunate enough to be associated with Oppenheimer, Neuberg, Cronheim, Caspari and L Michaelis A Durig and others Oppenheimer had a happy disposition, he was a keen mountaineer and motorist, a good companion and a self sacrificing friend Born in Berlin in 1874, he lived in exile in Holland the last years of his life, heart-broken, and ill with a slowly developing malady, but thinking about the future with his friend and publisher W Junk He is mourned by two sons, of whom the elder is chief of the experimental botanical garden of Rehovot in Palestine

HOSPITAL SURVEYS

FOR some months Dr A M H Gray and Dr A Topping have been surveying the facilities and gaps of the hospital services of London Mr E Rock Carling and Dr T S McIntosh have been doing the same for the North-West of England and North Wales, and last week Prof J A Ryle and Dr A E Quine began work on the North-West of England Speaking at Oxford on Sept 25, the Minister of Health announced that the Nuffield Trust had now appointed Mr H L Eason, MS (chairman of the GMC) Dr R Veitch Clark (former MOH for Manchester) and Mr W H Harper (house governor of Wolverhampton Royal Hospital) to undertake the three ridings of Yorkshire, and he expects further extensions of this orderly network before long The first function of the surveys, Mr Brown continued was to find out the facts, then second to give opinions and advice founded on these facts As far as publication went he distinguished sharply between these two kinds of material Facts should of course be made freely available to all, but he was quite sure that the reports themselves must remain confidential to the trust and to his department if they were to be full and frank They would inevitably lose in value if they were prepared as public documents From a study of the facts and advice tendered by the surveyors he would in due course draw his own conclusions, and the facts and these conclusions would be laid before the local authorities and governing bodies of voluntary hospitals But there would be no question of imposing a ready made plan or of requiring local action to be taken in accordance with these conclusions Legislation would probably be necessary later to give effect to the Government's declared policy of laying on the major local authorities, in full consultation with the voluntary bodies concerned, the duty to provide an adequate hospital service But this legislation would be the subject of consultation with all interested parties before it was introduced into Parliament and Mr Brown envisaged that it would embody the normal procedure of calling for proposals from the local authorities in each area In drawing up their proposals the local authorities and the voluntary hospitals could only be helped by the spade work covered by the surveys and the recommendations based on them Thus the object of the surveys was not to produce working drawings but to provide "a rich fund of knowledge and experience on which those may draw freely who are charged with the task of producing working drawings"

ON Monday, Oct 19, at 2 30 PM SIR WILSON JAMESON, will deliver the Harveian oration at the Royal College of Physicians His subject will be war and the advancement of social science

Special Articles

TIME AND THE SECOND MB

REFLEXIONS ON THE STUDENTS' GUIDE

SAMSON WRIGHT, M D, F R C P
OHN ASTOR PROFESSOR OF PHYSIOLOGY IN THE UNIVERSITY OF LONDON, MIDDLESEX HOSPITAL MEDICAL SCHOOL

THE medical course is already extremely long—in the pinion of some, too long Medical knowledge is still dvancing rapidly and will no doubt advance rapidly for many years to come If we attempt to teach students ll that is known it would take them a life-time to master their subject It is the business of the teacher, after the appropriate time to be devoted to any particular part of the curriculum has been decided, to select from his subject those aspects which are of greatest value to the future practitioner and which also serve in training the student in the methods of science It is his business also to see that no more is attempted in the time than a man of average intelligence can satisfactorily master

I want to apply these general principles to the 2nd MB course in the University of London Unfortunately the student at present working for this examination believes that he is studying at least a dozen subjects dissecting-room anatomy, embryology radiological anatomy surface anatomy (in some departments, I think, " living anatomy "), histology, physiology, organic chemistry, biochemistry, experimental physiology (in some places biophysics), neurology, special senses, pharmacology, and so on and so forth In point of fact he is simply studying the arrangement, structure and workings of the body particularly the human body The arrangement of the body is studied in the dissecting-room on the surface in the living subject and in the X-ray room Structure is dealt with in histology and the rest of the student's time is, or should be devoted to various aspects of function Forty years ago our knowledge of function was much more meagre than it is today, though our knowledge of arrangement and structure was almost as complete , then it was reasonable and natural that most of the student's time should be devoted to arrangement and structure, and a small part only to function Today the situation is reversed far more is known and will be known about function than ever will be known about arrangement and structure From the point of view of the practitioner functional problems are becoming increasingly important Allocation of time suitable forty years ago is entirely unsuitable today

How much time should reasonably be allotted today to dissecting-room anatomy ? Practical anatomy manuals employed by most students are not student textbooks but encyclopædias Present-day anatomists, in fact if not in theory, demand that the student should dissect in the greatest detail every part of the body and master most of the details Anatomists say that all they require of students is the fundamentals of the subject , and this may be true as far as heads of departments are concerned But the student is guided by his textbooks and by demonstrators in the department who are often working for the higher surgical examinations and are deeply interested in the minutiæ of anatomy Students believe they have to master practically all that is known about topographical anatomy I suggest that our first step should be to reduce the amount of time spent in the dissecting-room to not more than 25% of the total time in the curriculum One distinguished professor of anatomy tells me that in a course of 40 weeks total duration an average of 6 hours a week for dissecting should be adequate (total 240 hours) In London the terms are longer, and on an average the student is spending 32 hours a week at the school for not less than 50 weeks and in some places 60 weeks at 8 hours anatomy a week the total available is say 400–480 hours If to this figure of 8 hours a week for dissecting another 2 hours are added for embryology histology, surface anatomy, radiological anatomy, and any other methods that may be available for studying arrangement and structure, a total of 500–600 hours are provided which seems quite adequate I am not suggesting that in a course of 10 hours a week the student could master all the anatomical detail that he studies, and that is actually expected of him now The course will have to be revised so that inessentials are eliminated, and only such facts taught as are necessary for the training of the general practitioner Any student who wished to become a surgeon would return to his anatomy later to master the degree of detail necessary for his future work

My suggestion would leave about 20 hours a week available for the study of function Many anatomists are uninterested in the teaching of topographical anatomy, many have taken over histology but do not find that satisfying either, and are not happy even when they give an elaborate course in embryology Many are anxious and some are competent to teach function There is, however, no reason for calling the functional aspects " anatomy " Most anatomists like to teach the physiology of bone, many like to talk about growth, and some are interested in reproduction, some in neurophysiology , there may be anatomists who would like to teach hæmodynamics There is no harm in anatomists desiring to teach function provided they are clear in their minds that hæmodynamics, for instance, or the physiology of the nervous system, really are aspects of function, and do not deal primarily with considerations of arrangement and structure Each medical school must decide for itself which members of its staff are most competent to teach the various branches of the curriculum If it was thought that a professor of anatomy should teach the physiology of the nervous system, he could teach it in the laboratory in the school equipped for the purpose At present many departments want to expand, and they assess their importance by the number of hours of the student's time that they can claim and the number of teaching laboratories under their control Subdivision of the curriculum for the 2nd MB into watertight compartments is an increasingly antiquated system which will soon have to be modified The teachers concerned with function ought to confer, and select from the immense mass of material at their disposal those aspects of the subject which will enable the future practitioner to do his work efficiently and also make him a man of science

The teaching and examination in organic and biochemistry are under discussion Medical students are not being trained to become organic chemists they need a knowledge of fundamental organic chemistry in order to understand the chemical processes taking place in the body in health and disease The course in organic chemistry in most medical schools would equally well introduce any branch of organic chemistry , it is not specifically directed to the purposes of medicine. The preparations and tests that the student carries out have no intrinsic, and little educational, value He has learned to weigh and measure and carry out simple calculations in his inorganic chemistry course and he will get further practice in the course for the biochemistry section of the 2nd MB What he clearly needs is a combined course which should be called what it is—biochemistry This should teach him the fundamentals of chemistry in so far as they are needed for his biochemistry, and he will then proceed at once to study biochemistry both theoretically and practically Such a coordinated course would be more useful, enabling him to deal much more thoroughly and in as short a time, with the chemical processes in the body

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THE DOCTOR IN THE FACTORY

A MEMORANDUM[1] on medical supervision in factories, issued by the Factory Department sets out on broad lines the duties which a medical officer may reasonably be expected to fulfil He must have direct personal contact with the management, so that any views he expresses will be immediately and sympathetically received The department thinks it better still if he is an integral part of the management on the personal side, though he should not be concerned with wages, hours of work or conduct of the factory on the production side except so far as hours and conduct of the factory affect the health of the worker It is a weakness of the industrial medical service that there are workers who feel the doctor is the servant of the management, chiefly interested in maintaining production The implications of this paragraph in the memo are very wide

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[1] Form 327 H M Stationery Office Pp 8 2d

The principal duties of the medical officer, as set out here, are to organise first-aid treatment for injury and sickness in the factory and to help in ARP services and training, to examine and advise those referred to him by the labour manager, those who wish to consult him, and those engaged in work with special hazards, to make sure of the fitness of those returning to work after illness, to advise the management on general hygiene and educate the workers in general and personal hygiene, to cooperate with the management and outside welfare authorities on all matters affecting the health of the people, and to maintain an effective liaison with private practitioners, hospitals and local authorities, and to keep confidential and adequate records Medical examination of new employees is not required by statute except for those under 16 or those about to be employed in special processes, but the memo suggests that medical examination of all entrants should now be considered Those employed in specified processes which carry risks have to be examined at regular intervals, and with the approval of the Chief Inspector of Factories the works medical officer can undertake such examinations Apart from this, a large labour turnover or a falling off in production by a given group may lead the medical officer to examine that group with a view to finding out whether the nature or conditions of work are responsible, and if so whether any preventive measures could be introduced By keeping in close touch with private doctors the medical officer can give much useful advice about the return of a man to work after illness The private doctor may hesitate to send a patient back early because he knows nothing about the kind of work he will be expected to do, or he may unwittingly sign the man off before he is fit for his particular job If the factory and the private doctor work together it should always be possible to get the man back to his job as soon as he is fit, or to put him temporarily on to some suitable employment until he has recovered his full powers This degree of cooperation between factory and private doctors has not yet been achieved, as was evident from discussion at the BMA annual representative meeting[2]

It is also the task of the works medical officer to help in the rehabilitation of the injured workman by arranging graduated work for him, and in collaboration with the tuberculosis officer to devise conditions of work suitable for a man returning from sanatorium treatment In order to judge of the strenuousness of different types of work the doctor must be familiar with all the processes in the factory, this will also enable him to recommend improvements in working conditions It is not his primary duty to undertake any treatment other than first-aid, but if further treatment can be conveniently given at the factory the memo suggests that it should be considered, provided the private doctor agrees In that case the factory doctor would send full details of the treatment given to the private doctor, or to the hospital if the man had been attending there He would also let the doctor or the hospital almoner know if the firm was willing to help the man to get special or convalescent treatment If the patient was referred to a physiotherapy centre the factory doctor would keep in touch with his progress there and encourage him to attend regularly The medical records should be confidential and the doctor should have charge of them, this would not preclude him from sending a report on general lines to the management about the health of the workers, attendances at the ambulance room, absences for illness, or excessive sickness-rate among groups of workers There should be some attempt to make records uniform, and the memo suggests a form of record card which might be used in factories Workers can be taught principles of general and personal hygiene in talks to individuals or groups of workers, The memo insists that the medical officer must have a consulting-room of his own

Much of his success will depend on establishing cordial relations with the workers, to this end (if to no other) he is advised to take an interest in social life and recreations in the factory

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[2] See *Lancet*, Sept 19 p 347

PALESTINE

TUBERCULOSIS

THE Hadassah University Hospital has published a review of the findings of various workers from which it appears that in many European countries the mortality from tuberculosis is lower among Jews than other people, while the incidence is higher This apparent paradox is ascribed to the poor conditions and the crowded quarters of towns in which many Jews live, they are thus freely exposed to infection, and the incidence is therefore high, but they also become immune to acute rapidly fatal forms of the disease In Tel-Aviv, which has the largest Jewish population in Palestine, between 1938 and 1941 the mortality from tuberculosis was about 3 8% of all deaths—a low figure, corresponding to about 0 3 per thousand population in the town The rate in Jerusalem was about the same The Jewish league for the control of tuberculosis in Palestine has increased its membership to 5500 and extended its activities to 12 new subdistricts In the spring a propaganda week was held with lectures and meetings at which the work of the league was described In this war as in others the incidence of tuberculosis is increasing and more patients are needing hospital treatment Beds are scarce, however, and other measures have to be resorted to, thus the University Hospital at Jerusaleum has appointed a physician to spend his whole time in visiting small country district where the incidence of tuberculosis is high He examines the entire population and gives theoretical and practical advice on the treatment of tuberculosis to local doctors and nurses The league maintains a convalescent home for tuberculous patients

FLOWERS ON THE ROCK

At the University Hospital in Jerusalem a new garden of the Mediterranean type has been planted for the pleasure of patients and visitors This may not sound much of an achievement, but Mount Scopus, where the hospital stands, is rocky and almost bare of any green plants The new garden has thus been won at the expense of a determined struggle, and will be appreciated in proportion

INSULIN PRODUCTION

The shortage of insulin noted in earlier letters[1] has by now been largely overcome Dr Geiger of Jerusalem has been working for the past ten months on the preparation of insulin, and by the end of February was ready to undertake large-scale production of the hormone in the crystalline form Local animal material is sufficient to provide insulin for all the diabetics in Palestine, and the home-made supply will mean saving in shipping space

FLUKE INFESTATION

Dr A Bychovsky reports 50 cases of infestation with *Heterophyes heterophyes* seen during the past four years This small fluke measures 1–1·7 mm long and is a fairly common parasite in Egypt, China and Japan It inhabits the small intestine, and when the flukes are present in large numbers may cause a catarrhal state with diarrhœa Bychovsky's patients complained in addition of pains in the abdomen, nausea, a bad taste in the mouth and lack of appetite Eosinophilia was sometimes present The infection was acquired by eating those species of fish which are intermediate hosts for the cercaria Of his series of 50 patients, 44 were women, he explains this as being due to a housewifely custom of tasting the fish before cooking it Treatment was by anthelmintics, especially thymol in doses of 0 5 g three times daily for 4 or 5 days

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[1] See *Lancet*, 1942, i, 601

MEASLES PROPHYLAXIS —The results of prophylactic injection of convalescent serum in a group of 84 child measles contacts are reported by L de C Freire and J Cutilhero (*Amatus Lusitanus*, 1941, 1, 207) The injection was given from one to twelve days after exposure In 3 cases prodromal symptoms were already present, and in them the injection was without effect Of the remaining 81, only 3 had an ordinary attack of measles, 11 had mild, attenuated attacks and the rest escaped altogether These observers maintain that convalescent serum is much more effective than either adult whole blood or placental extract

In England Now

A Running Commentary by Peripatetic Correspondents

THE average city dweller is not greatly given to looking at the sky in times of peace. It is true that the suburban resident has a habit of glancing skywards as he says good-bye to his wife on the doorstep of a morning. But at the best it is but a perfunctory business, for if it looks like rain he takes his umbrella as a matter of course, and if it does not look like rain he takes it as a precaution. In war-time we all see much more of the sky. Sudden noises make us look skywards by day, and long nights on the roof make heavenly bodies imminent and even friendly. Many urban dwellers must be familiar with such things as Orion's belt that they had been accustomed to think were only revealed on dreamily romantic summer nights during the annual holiday at the sea-side. There are more than stars to be seen by gazing at the sky, and there are more occasions for gazing at the sky than those provided by the alarms of aerial warfare. The other day I visited my dentist in a horrible industrial city of the North West. As I lay, gagged, in his chair one piece of blue was all that I could see through the upper panes of his window. Into this patch of blue there floated the quite unmistakable, wide-pinioned form of a buzzard. Round and round in wide circles the beautiful thing passed slowly across my patch of blue. By making signs and inarticulate noises I attracted the dentist's attention to it and before it had drifted beyond the frame of the window we had both seen what I expect no other person in that city saw—a buzzard in all its majesty sailing over the heart of one of the most completely industrialised areas of England. One might almost be tempted to recommend the convenient vantage of a dentist's chair to the eager bird-watcher, but to enjoy it to perfection one needs a dentist whose interest in ornithology is above mere professional enthusiasm.

* * *

The adage that it is an ill wind that blows nobody any good applies even to war, and though in the last three years I have often been irritated, occasionally depressed, and at times more than a little frightened, I have seldom been bored, and always profoundly grateful for the circumstances (even martial) that delivered me from those hypochondriacs that infest all practices. Whatever the Prime Minister may have to offer me in the way of blood and tears, I am freed, I hope for ever, from the woman whose sole (but incurable) complaint was a cold bottom. With this fundamental grouse she worked her way in strict rotation through the three partners that constituted my prewar practice, and though we all longed to warm it for her in an effective if unconventional way the necessity of paying our rent and feeding ourselves prevented us from telling her to go where her posterior would have been permanently cosy. The same applied to the anorexia nervosa who, though tempted with possets of cream by an anxious mother, continued to look like next year's rations. "It dates from the day she smashed up Uncle Fred's new car, Doctor. Very highly strung she is ... takes after me ... and of course it came as a great shock to her." It must have come as a great shock to Uncle Fred, but Sparrow Wrists patented hers first, and all that remains to Uncle Fred is a battered chassis and the faint suggestion that it was all his fault. No less maddening was a middle-aged woman who revelled in the unsuitable name of Wise, and till the outbreak of war suffered from mysterious and (as far as I was concerned) undiagnosed stomach symptoms. These took the well-known form of all her internals rising and fluttering like a lark in her scrawny throat. "Shelley's disease," muttered the senior partner when I relayed her history. "Hail to thee, blithe spirit! Bird thou never wert." He was more correct than he imagined for I was called to her one night to find she had stumbled dead drunk into the air-raid shelter, and was suffering from concussion. We weathered this distemper together, but afterwards she was a little shy of me and eventually took herself off to the new doctor (ever so clever!) round the corner.

These were, of course, the brighter stars in a long list of neurotics that haunted the surgery. One struggled with them, first medically, then psychologically, till exhausted by their capacity not to be cured one wrestled instead with the human desire to tell them to go out of one's life for ever, and the knowledge that as they had no intention of ever allowing anyone to cure them it was silly to put even their capitation fees into someone else's pocket. This view, sordid as it may be, did at least argue mutual freedom on the part of the patient and doctor. One endured them till that happy and never far distant day when one's temper wore a little thin and they betook themselves in a huff to other waiting-rooms. Once rid of them they provided rich food for laughter and became almost popular in contradistinction to that dreadful army of masochists who not only refused to get better—but wallowed in the harsh word, the black look, and the hollow moan that accompanied their visit. Even today I shudder when I think of them, and as one who means never to return to general practice I offer the following scheme as an infallible deterrent to the unwanted patient. It is specially designed for war-time, but no doubt a peace-time version could be evolved.

I have christened it temporarily "Supreme Patrifice," but put baldly it amounts to euthanasia for the useless. The method I suggest is as follows. When the medical sufferer's patience has finally run out of his boot heels, the surgery scourge should be invited to recapitulate the numerous symptoms that make life a burden for him, and in case his memory fails he can be jollied along with helpful references to his or her notes (if you've kept any), something in this style. "Now let me see, Mrs Mone, apart from this excruciating pain that circles your head, stabbing your eyes as it passes, and which naturally makes you wonder if you have a brain abscess, you are also a martyr to agonising spasms starting in your legs and rising to your stomach, so that it is impossible to eat anything. Yes, yes, I understand *perfectly*. This curious sensation always coincides with the icy hand that grasps your heart so that you feel you are *going* to suffocate. No of course I am not surprised that you begin to think of Aunt Amelia who died of angina. What? Oh, I'm sorry these heart symptoms are the aftermath of this dreadful giddiness that attacks you just before one of your *awful nerve storms*. Yes, yes. Insomnia. Oh, quite." You now prepare to launch the key phrase. Somehow you stop this flow of ailments and leaning forward murmur, "Under *such* circumstances life must be a burden, now don't deny it (they won't), a real burden, and therefore you are one of the people that I can safely recommend—with your permission—to the *Ministry of Health*. Now I want you to understand this is absolutely confidential." You thereupon hitch up your chair cosily near theirs, and rapidly outline a scheme by which they can save the country food, clothing, &c., by allowing you to eliminate them painlessly. All they have to do is to fill up a form for ministerial filing purposes, and in perfect privacy and at the Government's expense they can plunge fearlessly into that bourne from which no traveller returns. Stress is laid during this patter on the immense service they will be rendering their country by ridding it of such a dead-head, their happy release from a painful existence, and the complete secrecy that will prohibit anyone but yourself from knowing of their sacrifice. If they ever allow you to get as far as this, you give them several days to think it over and make final arrangements for their departure. I predict that in most cases they will sweep out in angry fright, and you will never set eyes on them again. If, however, by some horrible chance your patient should agree, you can always say the Government has changed its mind—it often does.

* * *

A fascinating disease this nephritis; I wish I knew something about it, but the more I read the more fogged I become. At present I have three cases on my visiting list. The first is that of a young man now 22, whom I have been "watching" since he was 7. All these years he has undoubtedly had chronic nephritis and appears to be no worse now than he ever was. Incidentally, for the past 5 years he has continuously run a slight temperature, the cause of which has confounded the local pundits. The second case is that of a man aged 60 with hypertension and a high blood-urea who has had what are presumably uræmic fits at intervals for the past 3 years at least, and seems no nearer his end than when first diagnosed. The third case is that of an arteriosclerotic, slightly osteo-arthritic, but otherwise tough septuagenarian lady who suddenly "blew up" with generalised œdema just before last Christmas Her arterial tension rose and she leaked great quantities of albumin but her blood-urea remained almost normal She had several bouts of "uræmic" vomiting during which she appeared moribund The œdema fluctuated but tended to increase, and in the faint hope of reducing it I gave her a couple of quite small doses of 'Salyrgan' and a pot cit mixture Nothing dramatic happened, but four or five days later she suddenly got rid of all her œdema and indeed of all her symptoms She is now eating ravenously and gaining weight The urine now contains only a trace of albumin and the blood-pressure has fallen to its usual level She has, in fact, behaved exactly like a case of "pregnancy kidney," which recovers completely after the birth of the infant, but in this case pregnancy can, I think, be excluded

* * *

Coming back from a well-timed midder early this morning I joined the birds in their songs of praise Let us now praise District Nurses and the Committees that begat them, for they are daughters to the aged, mothers to the motherless, sisters to them in labour, whose hands, holy but sterile, heal the sores of the outcast and the brains that have broken, clip the beards of the ancients and the nails of them who cannot bend or see, who perform the task of the menial and are paid with the thanks of the lowly and the privilege of service, who come like sun to the prisoned and song to the cottage, who bring the news of the village and the jest of the market, and bear a message from one who is sick to another, who ease the way of the dying and the crown of the baby, who watch the going of life with stertorous gliding and its coming with bulge and recession, oft keeping vigil by candle, who must walk in men's ways alone, warily treading between the footmarks of gossip, the ruts of malice and the paths of the partisan, who oft see the dawn of a day, but know not the labours it's bringing O apostles of soap and sanity, O black-bagged friars of country lanes, Angels on Push-bikes, I salute you, District Nurses!

* * *

It seems to me high time that the taking of notes at lectures was prohibited and the student supplied before each lecture with a cyclostyled or typed note, as full as possible, of the points to be discussed during the lecture You may say that this would reduce the lecture to the level of a tutorial or grind class But why not? Why should not every lecture given to students be 100% efficient in teaching value? My own recollection of student days, now many years ago, is that more than half the time spent at formal lectures was wasted Even the BBC for their lessons to schools publish booklets on each subject which are often referred to by the speakers Formal lectures were all very well in the old days of the Continental schools of medicine, because the common language was Latin Lectures then were probably given at dictation speed, for a lecturer had not only to make his subject clear to students of different nationalities but had also to avoid the charge of "false" Latin which might be levelled against him if he spoke too quickly and slurred his words Those modern lecturers who insist on pencil and notebook should either speak at dictation speed or make medical students pass a test in shorthand at their matriculation This might at least result in an improvement in the handwriting of the profession, a worthy object in itself

* * *

On my way home from an outlying village I gave a lift to a 12-year-old cockney evacuee boy returning to his billet from school He was a boy of few words so that our conversation partook somewhat of the nature of a cross-examination "How long have you been down here?" I asked "Two years" "Like it?" "Yes" "Want to stay here for good?" "No" "Where's your home?" "Tooting" "You want to go back to Tooting?" "Yes" "Any brothers or sisters?" "One brother" "Where's he?" "Home" "What's he doing?" "Printing trade" "What's your father's job?" "Printing trade" "And your grandfather?" "Printing trade" "What do you want to do?" "Printing trade" It looks to me as though this family has a single-track mind

Obituary

ERNEST LLOYD JONES

M D CAMB

Dr Lloyd Jones, senior consulting physician to Addenbrooke's Hospital, Cambridge, died on Sept 16 in his eightieth year Born at Bowdon, Cheshire, he was educated at Manchester Grammar School and went to Downing College, Cambridge, with a Clothworkers' scholarship in 1882 In 1888 he qualified from Bart's where he won the senior science scholarship and he proceeded to the MD degree in 1891 Three years later he was awarded a BMA research scholarship for his work on the causes of chlorosis This subject remained one of his abiding interests and many of his writings deal with the blood in health and disease He also published in 1899 a study of the topographical distribution of cancer Lloyd Jones returned to Cambridge to work as demonstrator of pathology under C S Roy and soon joined the staff of Addenbrooke's as pathologist In all he was associated with the hospital for over forty years, and when he retired from the honorary staff in 1927 he continued his private practice till about eighteen months ago H B R writes — "Lloyd Jones had a real concern for his patients and gave his professional services without thought of remuneration and often, especially during the last few years of failing strength, without consideration for his own health He was kindly and gentle, and his patients, both in private and hospital practice, looked upon him as a real friend who knew how to brace and comfort them with his cheery stories" Lloyd Jones gave freely of his time to Papworth Village Settlement, where he was for a long time a member of the visiting staff and latterly chairman of the committee of management As a young man he had explored the Hoyle's Mouth and Coygan caves in South Wales and some of his fossil specimens are to be found in Cambridge museums On his rambles on seashore and countryside the cries and habits of birds absorbed him, and it was delightful to watch him care for special plants or animals which he had befriended He was a fellow of the Geological Society and of the Cambridge Philosophical Society, and at the time of his death was writing a book on foraminifera

In 1901 he married Constance Mary Brooke and they had one daughter

ARTHUR BROWNLOW MITCHELL

O B E, M B R U I, F R C S I

WITH the death on Sept 3 of Lieut-Colonel A B Mitchell, the older generation of Ulster surgeons lost one of its greatest men For fifty-two years he had served the voluntary hospitals of Belfast, for after he retired from active practice he continued his share in their direction until a few days before his death at the age of 77

In 1893, three years after his graduation, he became assistant surgeon to the Ulster Hospital for Children and Women, and in the following year, when still only twenty-nine, he was elected an assistant surgeon to the Royal Hospital, later the Royal Victoria Hospital He was senior surgeon when in 1928, two years before reaching the age for retirement, a finger-prick during an operation set up an infection which endangered his life for many weeks, left him with a crippled hand, and ended his operating career But his energy and enthusiasm were unabated, and in 1930 he was elected chairman of the board of management of the Royal Victoria Hospital, an office he held till his death during perhaps the most progressive period in the history of the hospital He saw its amalgamation with the Royal Maternity Hospital and the erection in quick succession of a new pathological department and new nurses' home, the Musgrave clinic for private patients, extensions to the wards, and finally a new isolation block, so that the one boundary wall now encloses a hospital colony of 706 beds During the last war Colonel Mitchell organised a military orthopædic hospital working with the Ulster Volunteer Force Hospital, and from 1917–19 he was a member of the Army Medical Consultant Council Till a few months before his death he was a member of the senate of the Queen's University, and in 1935 he was elected one of the

University members to the Northern Ireland House of Commons

Mitchell was in the fullest sense of the word a general surgeon—his published work included papers on acquired flat foot excision of the entire scapula and repair of injuries to the skull by perforated plates—but his greatest interest was in abdominal surgery, and especially in the surgery of the stomach and duodenum He was one of the pioneers of the operative treatment for perforated peptic ulcer and in 1903 he published in THE LANCET a paper on the surgery of gastric ulcer, while as early as 1909 he was able to report 23 operations for perforated duodenal ulcers with only one death Within the abdomen he combined speed of decision and execution with a gentleness and delicacy like that of Moynihan who knew and admired him His enthusiasm covered every detail of pre- and *post-operative treatment* He was always in hospital a few minutes before he was expected wasted no time but never forgot, nor allowed any of his staff to forget the essential humanity of medicine He knew his hospital patients as well and esteemed them as highly as his private ones, and took an interest not only in them but also—how much rarer—in their relatives

As a teacher, Mitchell was outstanding An excellent speaker he was dogmatic enough to impress the basic principles on undergraduates He was at his best at the bedside where he took delight in demonstrating physical signs and for him the most commonplace conditions yielded fresh material In every way he fitly filled that calling which “ should exact the utmost that man can give—full knowledge exquisite judgment and skill in the highest to be put forth not at any self-chosen moment, but daily at the need of others

EDWIN LANCELOT HOPKINS

MC MRCS DPH DPM

Dr E L Hopkins who died on Sept 10 at the age of 53, had been medical superintendent of the Derbyshire County Mental Hospital for over ten years His charm sense of humour and kindly sympathy endeared him to his patients and he had served them well for he had done much during his stay at Mickleover to improve their living conditions, methods of treatment and to give them a fuller sense of security and freedom of outlook He avoided hasty decisions, but his judgment was sound and the psychiatric clinics which he began at Derby and Chesterfield were the beginning of plans which the war unfortunately postponed As a student Hopkins was an all-round athlete and played rugby for the London Hospital and for Somerset After qualifying in 1916 Hopkins at once joined the RAMC and was awarded the MC in Mesopotamia for conspicuous gallantry and devotion to duty while attending the wounded under fire. When he was demobilised he held an appointment in the Ministry of Pensions and took his DPH in 1921 He joined the LCC mental hospital service shortly afterwards and held posts at Bexley, Hanwell and Ewell before he was appointed to West Park hospital He married Miss Violet Joyce of Milverton in 1916 and he leaves her with one daughter

Dr JOSEF LOEBEL of Franzensbad whose death is announced from Czecho-slovakia, was the author of a semi-popular history of medicine and the medical sciences which attracted some attention when it was published here in translation in 1934

WOMEN DISPENSERS —The Ministry of Labour and National Service has appointed the Central Pharmaceutical War Committee to place in new posts women pharmacists, dispensers and drug hands who come within the Employment of Women (Control of Engagement) Orders Women subject to the orders who seek new employment should apply to the committee at 17, Bloomsbury Square London, WC1, and employers should send the committee particulars of any vacancy they wish to fill The National Association of Women Pharmacists, 18, Sheepcote Road, Harrow, Middx, may also receive notifications from employers and employees, but the responsibility for placing the women rests with the central committee. Arrangements for Scotland are under discussion between the Scottish Central Pharmaceutical War Committee and the Ministry of Labour and National Service, and for the present employers should continue to apply to the local office of the Ministry of Labour

Letters to the Editor

ANÆMIA IN PREGNANCY

SIR —May I protest against the loose use of the term “ pernicious anæmia ” to cover cases of the sort described by Miller and Studdert in THE LANCET of Sept 19 (p 332) The withdrawal of pernicious anæmia from the undifferentiated pool of the anæmias is one of the major triumphs of medicine within the last twenty years Pernicious anæmia is now a firmly established and clear-cut entity ; of these there are few enough in medicine and it seems a pity to ignore those that we have Ætiologically we know that pernicious anæmia depends upon failure in the production (or pace *αχρησια* the utilisation) of Castle's intrinsic factor of the antianæmic principle of liver That we remain in ignorance of the nature both of the intrinsic factor and of the antianæmic principle is regrettable but offers *no grounds for ignoring their* existence Further it is accepted that the diagnosis of pernicious anæmia demands a combination of gastric achlorhydria and of a megaloblastic anæmia Of the 23 cases reported by Miller and Studdert 20 showed free HCl in the gastric juice and under the terms of the definition at once fall outside the category of pernicious anæmia Whether the 3 remaining cases showed a megaloblastic picture either in blood or marrow in combination with the achlorhydria is not, I think, made clear Whether pregnancy may occur in the face of pernicious anæmia seems unknown and if we go on calling any form of anæmia occurring in pregnancy ‘ pernicious ’ it is likely to remain so

As pointed out in your leading article in the same issue the grave anæmias of pregnancy are mainly nutritional and Miller and Studdert draw attention to the nutritional element in their own cases It is to be remembered that Minot and his collaborators started the work which went so far to the elucidation of the problem of pernicious anæmia on the assumption that it also was nutritional it took some years to reach the realisation that this was not the case It would be a pity should this established fact become obscured

The point is of more than academic interest since once the diagnosis of pernicious anæmia has been established the patient must be instructed to continue with liver treatment throughout life , this does not apply to the class of case reported by Miller and Studdert It is for these reasons and with no intention of decrying the value of their careful observations that I am moved to make this plea for the rigorous restriction of the term “ pernicious ” as applied to anæmia

Wolverhampton.   S C DYKE

BRONCHIECTASIS

SIR —I read with interest in your issue of Sept 19 the report by Newton and Berridge of bronchiectasis in serving soldiers as a number of similar cases from another service have recently passed through my hands I notice that in their series all cases (four in number) involving the upper lobe were of the saccular type This has also been my experience and I would welcome the opinion of others on the matter The question is of significance in connexion with ætiology If the saccular type has a congenital basis and the fusiform and cylindrical types an infective one this distribution can be readily understood

My own interest has been aroused by two men whom I have investigated in hospital in the past few weeks One showed a saccular bronchiectasis limited to an upper lobe the lower lobe being normal The other—not a case of bronchiectasis, but found on routine radiography —showed a rarefaction of the left upper lobe with faint cystic markings on the straight film ; no lipiodol could be introduced into this lobe and bronchoscopy revealed that the area did not communicate with main bronchial tree It is tempting to suggest that in both these cases the ætiology was the same—a congenital cystic condition of part of the lung which in one case communicates and has become infected and in the other does not communicate and has remained harmless If this is so it supports the view that the saccular type of bronchiectasis represents infection of pre-existing congenital dilatations of the bronchi

C P PETCH

BRONCHIECTASIS

SIR,—Drs Martin and Berridge are correct in drawing attention to the fact that bronchiectasis may cause relatively mild symptoms but it would be wrong if the impression were engendered that bronchiectasis is ordinarily a disease that can be taken lightly Their observations must be viewed in proper perspective, and that is not the perspective of bronchiectasis itself but of disease as a whole Much the same paper could have been written about at least a dozen other diseases such as appendicitis peptic ulcer, gall-stones, varicose veins or even pulmonary tuberculosis—suppose their paper was headed " Pulmonary tuberculosis without disability Report on 25 cases diagnosed by early symptoms and confirmed radiologically ' (or even discovered by routine radiography) Pulmonary tuberculosis may be present without disability and may never cause more than transient disability We know that most diseases have minor variants or minor phases , bronchiectasis is no exception Martin and Berridge's cases are all highly selected, being taken from men passed into the Army as *apparently* fit , this first premise largely vitiates any wide application of their observations to bronchiectasis in general Again, it is strange to refer to the condition as one without disability when all the 25 cases had gravitated to hospital and all were recommended for discharge from the Army as permanently unfit In passing, this would seem far too sweeping a condemnation of really mild cases of bronchiectasis It is, moreover, incorrect to say that a man cannot be made fit for military service by lobectomy since I and my thoracic surgical colleagues have had patients so treated who have been accepted for or retained in the Services and are absolutely fit

Harley Street, W 1 R C BROCK

POST-ARSPHENAMINE JAUNDICE

SIR,—Your annotation of Sept 5 is opportune There can be little doubt that the "impression that syphilitic treatment is too often being complicated by jaundice" is widespread, and it is to be hoped, as suggested, that the Services may publish their figures You give the reported incidence of jaundice in cases treated with arsenicals as from 0 6% to 5% In a detailed paper by Sager (1936), however, the following figures of postarsenical jaundice are quoted Filhiol (1930), 7 7% , Milian Lotte and Delarue (1928), about 20% , Ruge (1931), about 19% in the German Marine Corps , and Gutman (1922), 7 4% Although, when the original articles are carefully perused, the evidence for these figures is not conclusive, it suggests that the incidence may be higher than 5% if looked for Dr Curtis in his letter mentions an incidence of between 25% and 30% among cases treated in the years 1937–40 at the Whitechapel Clinic

In my own experience, although low figures for post-arsphenamine jaundice have been found in small series of cases, when long series are studied the figures are considerably higher than those given in your annotation I hope shortly to publish in some detail the results obtained during the thirteen-year period, 1929–41, at the department for venereal diseases here Contrary to the statement in your annotation that there has been no evidence to correlate jaundice with any one arsphenamine preparation my analysis shows greatly different incidence after the various arsenicals, especially if arsenoxide ('Mapharside ') is included Mapharside gave the lowest jaundice rate, and also the shortest average illness, and its substitution for the arsphenamines has considerably reduced mortality as well as morbidity, while the clinical and serological results have never been so satisfactory

Your annotation mentions the possibility of the jaundice being due to a virus One might envisage two possibilities inoculation during treatment through faulty technique, or activation by the drug of a virus already present in the body The first is improbable, as during 1934–35 when NAB was used as routine the incidence of jaundice reached such alarming proportions that syringes were boiled before each injection without diminishing the incidence of jaundice The second possibility is interesting In the same years 1934–35 there was no abnormal rise in the incidence of jaundice amongst the patients in the other departments at St Thomas's, as would be expected if a jaundice-producing virus was at work The evidence is unconvincing in spite of the work done by the German (1932) and Scandinavian (1939) observers cited in your annotation Ruge epidemiological work, quoted to support the view that post-arsphenamine jaundice was due to " infectious hepatitis unrelated to syphilis or the arsenicals " can also be used to support the hypothesis that the drug and no a virus, is the cause, as he gives figures showing that the incidence of post-arsphenamine jaundice is less by one third in cases treated with sodium arsphenamine than in those who were given neoarsphenamine Moreover, why choose a complicated hypothesis of an unknown virus being activated by a chemical substance which itself is known to be a liver poison, when the simple hypothesis that the liver poison causes the liver damage fits the facts ? Further, as you observe, the incidence of this jaundice has gone up with the introduction of the arsenobenzene preparations, as also has dermatitis

My experience leads me to believe that the percentage and severity of post-arsphenamine jaundice is reduced appreciably by substituting arsenoxide for the arsphenamines and that the spirochæticidal value of arsenoxide is greater than that of the neoarsphenamines Sir Sheldon Dudley informs me that these conclusions have been confirmed by the results so far obtained in the Royal Navy

St Thomas's Hospital, S E 1 T ANWYL-DAVIES

PRIVATE PRACTICE

SIR,—In the controversy that has long been waged on the merits or demerits of private practice or some other method or methods of practising surgery and medicine is not a rather important point usually overlooked ? We are still living under a political system called " democracy," which in theory at any rate is supposed to prefer private enterprise, private initiative, and the rights and responsibilities of individuals to their nationalisation or regimentation or socialisation under a Communist, or Socialist, or Fascist regime Indeed, many of us are under the impression that the great sacrifices which this war entails are made in the cause of Christian democracy, at least that is what our chief men in statecraft and diplomacy are always telling us Surely then nothing but some extreme calamity, affecting the whole nation and rendering impossible any kind of private enterprise in any sphere of human activity, could justify the nationalisation of the most personal and the most individualistic vocation in the world—namely, that of medicine X.

MD CANTUAR

SIR,—Your note (Aug 29, p 267) on the grant of a degree in medicine by the Archbishop of Canterbury appears to have a bearing upon the following incident related in the House Book of the City of York under the date July 3, 1598

> " William Padmore, surgeon, was complained on by ye company [of Barber Surgeons] for exercising chirurgery in this cittie , not being a freeman, who said for excuse yt he was allowed and licensed to practice by my Lord's Grace under his seal , but ye court did not think him to be excused thereby but ordered him to pay penalty in ye surgeon's ordinance, which is two shillings per diem soe long as he practised, unless he can quit himself by law and upon the 28th July 1598 he refused either to pay ye said penalty or to take his freedome , whereupon he was comitted till he paid ye said penalty, and on 20th October 1598, it was agreed yt William Padmore shall be made free for £6 13 4 "

The Barber-Surgeons' ordinances prohibited practice or admission to their company until the applicant had obtained his freedom Everyone who proposed to practise surgery in York was compelled to join the company or be expelled from the city Moreover within one month of being made a freeman he was under the obligation to read a lecture on anatomy or surgery Conversely any freeman or woman who consulted a non-licensed surgeon was laid under the heavy penalty of a forty-shilling fine

It seems most probable that the licence claimed by Padmore refers to that under the seal of the Archbishop of Canterbury, for it does not appear that a similar power was vested in his Brother of York In this controversy the obstinacy of both parties resulted in a compromise But there was clearly more in the quarrel than meets the eye, for Padmore's name appears in the previo r in the Roll of Freemen where he is described as " Surgion " He was probably not a native, whereby he might have become free per patrem A number of physicians, some of whom were foreigners, did become freemen and practised medicine

The Robert Thoroton you mention as receiving the MD Lambeth 1663 was born in 1623 at Car-Colston, Notts, and settled down in practise there but " finding that he could not 'keep people alive for any time' decided 'to practise on the dead' and devoted himself to antiquarian pursuits He had his stone coffin prepared some years before his death 'ut post mortem corpus ejus intemeratum quiesceret' " [D N B lvi, 313]

Birmingham G A AUDEN

UNSIGNED REVIEWS

SIR —Perhaps it is because I regard Prof R A Fisher's published knowledge almost with veneration that I hasten at once to his support I read *Nature* regularly first, before even my *Lancet* and the other lesser medical journals I feel that I am in a position to judge that the reviews in *Nature* are not only better but much more reliable than anything in the medical world I cannot find time to search through years of back numbers for instances, but the event has occurred so often that I have come to regard it as an axiom that *Nature*, apart from being the best of all scientific media, is the best guide to reviewed scientific books of all kinds, just as *Punch* is the best guide to general literature and fiction

It had not occurred to me that the signed review was necessarily the more careful Certainly it is more satisfying to know who is writing , and, now that Professor Fisher has pointed it out, there is strong presumptive evidence that signed reviews will be the more meticulous Even Mr Punch's staff of " learned clerks " have recently taken to adding their initials Perhaps, therefore, you would reconsider the matter, and quietly " liquidate " your annotation which carries no conviction whatever

Chiswick W 4 THOMAS NELSON

TRAINING FOR CHILDBIRTH

SIR,—Some of us had hoped great things from the joint report issued by the Medical Women's Federation and the Ling Physical Education Association on the results of gymnastic training in relation to childbearing The conclusions reached seem to show that it is no worse for the mother than no training at all and that it is not harmful As you point out, it must be beneficial to the prospective mother to have increased suppleness of all joints and well-developed abdominal and pelvic muscles A more important inquiry is can childbirth be made easier by antenatal exercises ? Undoubtedly it can We have recently been taught that in preparation for childbirth the pelvic joints in woman become 2½ times more flexible than in the unimpregnated state Antenatal exercises are merely making use of this natural fact and are designed to promote general flexibility of the whole body while paying special attention to lumbar spine, sacrum, pelvic joints and ligaments My experience has been that they not only improve the expectant mother's health and sense of well-being, but fill her with hope and give her a sense of security and confidence in her ability to bring matters to a successful conclusion She feels she is now an active member of a team all in training for an event to which each one looks forward, the birth of her own child, and so she shows intelligent interest and pride , during confinement she hopes she is keeping up the reputation the class has already earned Records of the confinement of women who have had such training during their pregnancy show excellent results No trace of fear or anxiety and complete cooperation during labour are outstanding features

Hampstead Way, N W 11 KATHLEEN VAUGHAN

SURFACE FREEZING FOR DEEP PAIN

SIR,—Referring to the uses of ethyl chloride spraying described in your issue of Sept 5, I have used ethyl chloride extensively since 1924 both in dermatology and surgery and have arrived at the following conclusions

1 Acute inflammation of joints, extensive tears of ligaments and fractures are a contra indication

2 A case that does not respond favourably after two or three applications should be considered unsuitable for treatment

3 Red haired diabetic and hyperthyroid subjects are especially liable to skin injury

4 Ethyl chloride may cause skin injury resulting in lupus, as Prof R O Stein of Vienna and others have shown

5 It is advisable to use, after the ethyl chloride spraying, a liniment consisting of acetone, ether, camphor and alcohol This I have found helpful in prolonging the anæsthetic effect and shortening the duration of disability

6 Parts treated should be covered with " Vaseline " or zinc paste It is better not to apply any supporting bandage

The effect of ethyl chloride spraying is dramatic in the more chronic cases of stiffness of joints, contraction of tendons, &c , chronic shoulder pain, subdeltoid bursitis, old knee injuries with incarceration of cartilage, contracted peroneal tendons and such like In many cases which had attended as outpatients for as long as eighteen months it was possible to effect a cure by one or two applications of ethyl chloride and simple movements Ethyl chloride has been used successfully in alleviating pain in biliary colic (tenth intercostal space, ninth dorsal segment) and angina pectoris (third intercostal space, left sternal border) I have relieved a persistent hiccough by freezing the skin over the phrenic nerve (sterno-clavicular articulation)

London, W 1 J E O'LOGHLEN

Infectious Disease in England and Wales

WEEK ENDED SEPT 19

Notifications —The following cases of infectious disease were notified during the week smallpox, 0 , scarlet fever, 1882 , whooping-cough, 1150 , diphtheria, 878 , paratyphoid 8 , typhoid, 13 , measles (excluding rubella), 2998 pneumonia (primary or influenzal), 401 , puerperal pyrexia, 136 , cerebrospinal fever, 72 , poliomyelitis, 29 , polio-encephalitis, 1 , encephalitis lethargica, 1 , dysentery, 184 , ophthalmia neonatorum, 93 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Sept 16 was 1423, including scarlet fever, 390 , diphtheria 115 , measles, 171 , whooping cough, 215 enteritis 79 , chicken pox 65 , erysipelas 32 , mumps 32 poliomyelitis 1 dysentery 19 cerebrospinal fever, 8 puerperal sepsis 28 , enteric fevers 8 german measles, 2 , other diseases (non infectious), 147 not yet diagnosed 81

Deaths,—In 126 great towns there were no deaths from scarlet fever or the enteric fevers, 4 (0) from measles, 9 (0) from whooping-cough, 16 (1) from diphtheria, 69 (10) from diarrhœa and enteritis under two years, and 10 (2) from influenza The figures in parentheses are those for London itself

A fatal case of an enteric fever was reported from Greater London There were 7 deaths from diarrhœa at Birmingham, and 5 each at Hull and Liverpool

The number of stillbirths notified during the week was 206 (corresponding to a rate of 34 per thousand total births), including 21 in London

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FORTIFIED FOODS —Margarine now contains 500–600 international units of vitamin A and 60 IU of vitamin D per ounce The addition of prepared chalk to National wheatmeal flour has now begun Major Lloyd George announced in Parliament in April (see *Lancet*, April 25, p 517) that 7 oz of calcium carbonate is to be added to each 280 lb sack of flour, and the addition is now proceeding district by district

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL —The following lectures are to be given at this hospital, Gray's Inn Road, London, WC1, on Fridays at 4 PM during the coming months Oct 2, Mr G H Howells, ethmoiditis , Oct 16, Mr Lionel Colledge, the complications of middle ear suppuration , Oct 30, Mr F W Watkyn-Thomas, the treatment of deafness , Nov 13, Mr A R Dingley, symptoms and treatment of frontal sinusitis , Nov 27, Mr W G Scott Brown, war time injuries , Dec 11, Mr C Gill Carey, emergencies in nose, throat and ear surgery , Jan 8, Mr S A Beards, petrositis , Jan 22, Mr F C Ormerod, tuberculosis of the upper respiratory tracts , Feb 5 Mr N Asherson, acute emergencies in ear, nose and throat , Feb 19, Mr J C Hogg, cardiospasm , March 5, Mr S E Birdsall, sinusitis in children , and March 19, Mr J D McLaggan, chronic suppurative otitis media The lectures are open to all members of the medical profession without fee

Notes and News

FREE CHILDREN

The latest addition to "Contributions to Modern Education"[1] describes an unusual investigation which must have proved stimulating to those taking part Two series of schools are contrasted orthodox (B) and experimental (A) Miss Gardner has a bias in favour of adventure in education, and the results of her survey give her a perfect right to it—such an overwhelming case in fact that it is a pity she shows an enthusiasm for one type of school at the expense of the other Her use statistically of average deviation rather than the usual mean deviation might be criticised, but her conclusions speak for themselves In the A as compared with the B schools there was less formal teaching of the three R's, and more time was given to free play, handwork, and experiment Questions, talk and movement in class were encouraged The observations made covered school subjects, drawing, physical skill, concentration, neatness, self-confidence, artistic and linguistic expression, and sociability in the playground as well as in the class-room The children were carefully matched in intelligence, social setting and age in the two kinds of school On achievement, the children educated in the free type of school undoubtedly do better, and do it earlier, than the others There is one exception—neatness in writing—which at seven is a poor sort of consideration anyway The importance of this study lies as much in the liberation of the infant school teacher from a dreary routine of lessons as in the emancipation of the child from an equally boring series of sessions which have to be endured It would be interesting to repeat the experiment in Scotland, where play in schools as a substitute for lessons is still highly suspect

Prisoners of War

The following RAMC officers have been posted as prisoners of war

Major J A G Carmichael, MRCS, WS/Captain H D Fleming, MRCS, Captain James Gendle, MB LPOOL, WS/Captain C D Holdstock, MB LOND WS/Captain Geoffrey Lancaster MB MANC, WS/Captain H J McPherson, MB EDIN, WS/Captain J C Mustardé, MB GLASG WS/Captain A P Norman, MB CAMB, WS/Captain N C Rogers MB LOND, WS/Captain J A Sutherland, MB GLASG, and Captain Per Turner, MB SHEFF

Medical Honours

The following awards have been made to medical men in the Services

DSC—T/Surgeon Lieutenant H S A Corfield, LMSSA RNVR, T/Surgeon Lieutenant K C Jeffery, MB LOND, RNVR, T/Surgeon Lieutenant R D Robinson, MRCS, RNVR

MC—Captain A A Byrne, LRCPI, RAMC, Captain C R Tilly MRCS, RAMC, Captain Eric Townsend, MD EDIN, RAMC, Captain James Watt, MB GLASG, RAMC

The MBE has also been awarded to Dr R H Moyes, deputy MOH for Kingston on Hull

Throughout enemy air raids Dr Moyes has played an important part in succouring wounded and victims and in encouraging the personnel of civil defence services In one raid he assisted many trapped people and gave morphia to ease the sufferings of those who could not be immediately released This necessitated crawling into tunnels when debris was still falling, Dr Moyes has been medical officer at many incidents and he has always maintained a high standard of professional skill and courage

British Medical Association

Dr Peter Macdonald (York) has been elected chairman of the representative body and Dr J B Miller (Glasgow) deputy chairman

Royal Sanitary Institute

A meeting of the institute will be held at 11 AM, on Saturday, Oct 10, at West Bromwich, when Dr W S Walton will speak on some practical health problems of today from the MOH's standpoint Mr W W Foakes will deal with the same subject from the point of view of the sanitary inspector On Wednesday, Oct 21, at 2 30 PM, a meeting will be held at the Institute, 90, Buckingham Palace Road, London, SW1, when Dr Henry MacCormac, Dr Thomas Standring and Major C. G Johnson will open a discussion on scabies

Royal College of Surgeons of England

Arnott and Erasmus Wilson demonstrations will be given at the college in Lincoln's Inn Fields, London, WC2 on Monday Tuesdays, Wednesdays, Thursdays and Fridays at 4 PM during October

The first will be given on Oct 12, by Dr A J E Cave who will speak on the olfactory parts of the brain Other lecturers are to be Mr L E C Norbury, some forms of intestinal obstruction, Dr Cave, the visual parts of the brain, Mr C E Shattock, diseases of the testis, Dr Cave, the mid brain and basal ganglia and epidermal structures, Mr R. Davies Colley, bone tumours, Dr Cave, mesenteries, fold and peritoneal ligaments, Mr Shattock, diseases of the breast, Dr Cave, unspecialised mesodermal derivatives and neuro osseous relations, Surgeon Rear-Admiral C P G Wakeley injuries of the skull and brain, Dr Cave, articulations of the axial skeleton and anatomy of the shoulder girdle

All the demonstrations will be open to medical practitioners and advanced students

University of Wales

Dr Nancy Rogers and Dr Julius Naftalin have been appointed assistant lecturers in the department of pathology and bacteriology

The Index and title-page to The Lancet, Vol I, 1942, which was completed with the issue of June 27, will be ready next week A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager, 7, Adam Street, Adelphi, W C 2 Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

Appointments

Allen W H E, MRCS RSO at Royal S Hants and Southampton Hospital
Bliss Theodore, MRCS RSO at Corbett Hospital, Stourbridge
Culley, A R, MD WALES, DPH MOH and School MO for Glamorgan
Dally, J F Halls MD CAMB, MRCP medical superintendent of All Saints Emergency Hospital, Bromsgrove
Fletcher Anne, MRCS temp asst MO at city maternity home, Handsworth Birmingham
Jeans, Alberta MRCS surgical registrar at the Royal Victoria Infirmary, Newcastle-on Tyne
MacFarlane, J W MD GLASG FRFPS Workmen's Compensation, medical referee for Glasgow, Lanark, Hamilton and Airdrie
Sambrook D K, MB LOND, RSO at Leigh Infirmary
Sommerville, J A, MB GLASG examining factory surgeon for Saddel and Skipness, Argyllshire

Births, Marriages and Deaths

BIRTHS

Denny Brown—On Aug 23, at Boston, U S A, the wife of Prof Derek Denny-Brown, FRCP—a son
Elliot Smith—On Sept 21, in Oxford, the wife of Mr Arthur Elliot Smith, FRCS—a son
Golden—On Sept 17, at Norwich the wife of Lieutenant M B H Golden, RAMC—a son
Lister—On Sept 20 at Twyford Bury, Bishop's Stortford, the wife of Major Arthur Lister, FRCS RAMC—a son
Morse—On Sept 19, at Midhurst, the wife of Dr Philip Morse—a son
Parke.—On Sept 18, at Liverpool, the wife of Mr William Parke FRCS—a daughter
Robinson—On Sept 20, at Rochester, the wife of Surgeon Lieutenant Alan Robinson, RN—a son
Ward—On Sept 19, in London, the wife of Dr P M Ward—a son

MARRIAGES

Martin—*Hurst—On Sept 19, at Bowdon Cheshire, William Desmond Martin, Lieutenant* RAMC *to Evelyn Pamela Hurst*
Pearce—Wynne—On Sept 26, at St. Ives, Huntingdonshire Gerald Huxham Pearce FRCS, to Eileen Barbara Wynne
Semple—Dewar—On Sept 22 in Glasgow, Thomas Semple, Lieutenant RAMC, to Elspeth Roubaix Dewar

DEATHS

Bell—On Sept 19 at Radmoor Thomas Bell MD GLASG, JP
Dring—On Sept 21, at Tenterden Kent, William Ernest Dring MRCS JP aged 90
Fawcett—On Sept 22, in Bristol Edward Fawcett, MD EDIN, FRS emeritus professor of anatomy
Hinchco—On Sept 21, Harold Hinchco, MRCS, DPM, of Langham Court Wimbledon
Kellett Smith.—On Sept 23, Joseph Stanley Kellett Smith FRCS DMRE of Cheltenham
Kerr—On Sept 21, at Southport, James Rutherford Kerr, CBE CH M GLASG

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[1] Testing Results in the Infants School D E M Gardner, MA, lecturer in education at the City of Leeds Training College London Methuen Pp. 158 6s 6d

EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS*

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IN the past ten years more papers have been published on this subject than on any other aspect of chest disease. This implies something deeper than intrinsic interest. It reflects a feeling of uneasiness, even a sense of disappointment, however much this may be camouflaged by a repetition of our difficulties and by a hope that an ever-spreading knowledge of premonitory symptoms and early signs will put an end to our continuing failures. We discuss the early diagnosis of pulmonary tuberculosis, and are still a long way from the diagnosis of early pulmonary tuberculosis, except in a disappointingly small percentage of cases. We have no cause for complacency.

It is true that the last twenty years have seen progress in certain directions. Propaganda directed at the public and the general practitioner has been widened; we have set up better equipped public-health services, and have been urged to greater efforts in diagnosis by noting the encouraging immediate and end-results of modern collapse therapy. On this last point Dr. G. S. Todd of King Edward VII Sanatorium, Midhurst, has kindly supplied the following figures. Among sputum-positive cases, the five-year survival-rate after discharge from the sanatorium averaged 44% before the introduction of collapse therapy in 1925; after that date it rose to 60% until 1935, when it again rose to nearly 70%. Furthermore we have been heartened by the study of graphs of falling national death-rates. Thus, the tuberculosis death-roll for England and Wales in 1938 was 26,178, a fall of 10,456 since 1928—that is, an improvement of 31 per 100,000 of the population in 10 years.

Detailed analysis of the present position in respect of the number of sufferers and the extent of disease at diagnosis is, however, not so pleasant. In that same year of 1938 about 230,000 cases were under observation at the tuberculosis dispensaries of England, Scotland and Wales, while 65,000 new cases were notified, and there were 30,000 deaths from the disease. Moreover it claimed half the total deaths from all causes at ages between 15 and 24, an age-group particularly important in national economy, and the one in which the decline in mortality has continued at a slower rate than in any other. To this we must add that the increase in deaths from all forms of tuberculosis between 1939 and 1940 was 3005, and that returns for the respiratory form in 1941 are 13% above the average for 1938 and 1939. Indeed, if we draw conclusions from experience of the last war, we may expect now a temporary levelling of this comparative increase, and then a sharp rise in both incidence and mortality over the next two years.

What of the results of increased propaganda and improved facilities for dispensary diagnosis? Two comparative sets of figures will enlighten us. In 1927, of adult patients admitted to residential treatment for pulmonary tuberculosis under the London County Council scheme, only 6% were classified as B I at the time of admission; 78.4% were classified as B II or B III. In 1937, that is 10 years later, 5.7% were B I and 80.3% B II or B III. These facts speak for themselves. We *cannot* claim that any advance has been made by propaganda, and what is much more instructive is the fact that the best possible tuberculosis services with every modern equipment made no improvement towards earlier diagnosis in 10 years.

This depressing story has a still more depressing ending. By the extent of disease at diagnosis the majority of these unfortunates are unsuitable for modern methods of treatment and but few survive for 5 years after discharge from sanatorium treatment. They show a poor economic return and a minimal gain in social happiness for the care and expense afforded them. Thus, patients discharged in 1932 from LCC residential institutions and traced till 1937 give the following survival-rates—for B II cases, 41.2%; for B III cases, 7.9%. When we place against these figures the survival-rate of 81% in B I cases, the necessity for early diagnosis with all its attendant advantages to the individual in efficient treatment and to the national economy in the return of patients to work is self-evident. The after-history of Midhurst patients with stage of disease comparable to B I shows an improvement in the five-year survival-rate from 86% in 1930–32, to 93% in 1933–35.

Is there any cause in the present conditions governing diagnosis that by itself denies us the power to discover disease at an earlier stage? Why do we fail in spite of trained observers and continually improving health services? The answer is not far to seek. For diagnosis, doctor and patient must meet. Up to the present, in civil practice, a doctor must perforce wait until the patient comes to him. It is only with the arrival of symptoms, and not always then, that the patient will seek advice. To ask the general practitioner therefore to diagnose at a stage before the appearance of symptoms for which his advice is eventually sought is to ask the impossible. On the other hand, there are those who still preach that all cases of established phthisis have symptoms. We could wish this were true, but experience has taught us otherwise.

SYMPTOMS AND SIGNS

That the present method of approach is unsatisfactory and must deny us opportunity for the discovery of early disease in all but a small proportion of sufferers does not mean, however, that every case presenting himself is diagnosed when he should be. To found diagnosis only on the discovery of tubercle bacilli in the sputum is to wait for the late sign of ulceration of the lesion into a bronchus, and is just as culpable as to ignore the presence of nummular sputum or gross clubbing of the fingers. To delay until added sounds are heard above the collarbone is to diagnose only when at least a third of the lung is already involved. There are undoubted warnings in past and present histories of patients which nature gives and many doctors either ignore or fail to investigate. A study of the past histories of 2000 patients of Midhurst Sanatorium with positive sputum disclosed that 26.6% had an untreated or inefficiently treated hæmoptysis or pleurisy some 3 or 4 years before admission. This does not imply that these two conditions are always indicative of tuberculosis, but it does prove that large numbers of young adults do not have the expert and eliminating examination which such conditions should demand. Among similar warnings too often ignored are: cough of more than a month's duration; persistent indigestion; nausea or actual sickness with meals, especially breakfast; an unnatural lassitude, often accompanied by uncomfortable face-flushes in the late afternoon; fistula-in-ano; amenorrhœa, and erythema nodosum. There is no doubt that if patients with such complaints were referred immediately for complete chest examination and periodic review many more would be diagnosed in the earlier stages of the disease.

To many doctors physical signs in the chest have come to mean only the presence of added sounds. By its pathology the lesion cannot give added sounds until the caseous contents of infected acini break down and discharge into their accompanying bronchioles, by which time fibrosis and plastic pleurisy are developing and the patient may already be past the best stage for the simpler methods of collapse-therapy. Long before this occurs, the usual initial silent area of bronchopneumonia gives two definite physical signs in lack of movement and evidence of mediastinal shift. It imposes on the side of the disease a loss of movement far beyond its extent, so that the base lags behind that of the opposite side when the actual area of deposit is but a single subclavicular focus. Again phthisis is the chronic chest disease par excellence to produce the sign of mediastinal displacement from its earliest appearance. While the stethoscopic signs of fibrosis and the X-ray findings of tracheal and mediastinal shift are still absent, the patient with a unilateral and early lesion shows a diagnostic tension of the origin of the sternomastoid at the inner end of the clavicle on the same side of the chest, and thus warns the physician of the presence of an abnormality that requires the strictest investigation.

When added sounds do appear, they are for a considerable time slight in extent, and found only in the early *hours of the day*; their causative mucus is coughed up or absorbed hours before the usual evening consulting hour If their presence is suspected they are to be sought before the patient gets up in the morning In their actual quality they are bronchitic, in fine sibili and occasional rhonchi They have, however, two diagnostic characters which differentiate them from the sounds of simple bronchitis and thus should obviate the lesser diagnosis at a critical stage of the patient's illness First, they are unilateral and seldom heard at the base, secondly, they are, as no other such sounds in the chest, made more and more insistent with the depth of inspiration until they reach a crescendo at its very end They are therefore totally opposed to the sounds of simple acute bronchitis, which are always most evident in the first half of inspiration

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* The Varrier Jones Memorial lecture delivered before the Halton Medical Society on Sept. 25, 1942.

Unfortunately, as we shall see upheld by the results of X-ray examination, the disease has progressed to a later stage in almost every case before it reaches expert physical examination The usual type of lesion has already signs of fibrosis and pleural thickening, and many are already showing the signs of cavitation To the stethoscope, fibrosis reveals itself in fine to coarse crepitations which have a dry quality to the ear, and are heard throughout the whole phase of inspiration They do not disappear with cough as the bronchitic sounds usually do, because they are evidence of an increase of interstitial tissue Signs of pleural thickening can often be heard in a burst of fine crepitations which accompanies the act of coughing When cavitation is present, the stethoscope usually produces a more reliable sign of its presence than can be discovered by listening for whispering pectoriloquy, coarse metallic added sounds are heard in the last half of inspiration, reaching a crescendo at the end, and remaining after cough They can be heard in many cases where whispering pectoriloquy is absent because the cavity is full or almost full of tuberculous exudate

OTHER AIDS TO DIAGNOSIS

Estimation of the sedimentation-rate of the red blood-cells may aid the diagnosis A fall beyond 10% in the micro-method or 8 in the Westergren method is suspicious, and ought to be considered in the summation of a doubtful case It is not, however, diagnostic, the cause may be some intercurernt condition, worry or psychological upset On the other hand many proved active cases with positive sputum show a fall within accepted normal limits

Sometimes an exercise-test on pulse and temperature will help The case of active disease will often fail to return a pulse-rate below 90 in five minutes, or a normal rectal temperature of 99° F in half an hour after a brisk walk for 20 minutes

The next step in investigation is X-ray examination The last 25 years have seen such great advances in equipment and technical procedure that nowadays a clear picture can be produced, while the correlation of pathological processes and their physical signs with corresponding shadows on the film has made interpretation more and more exact to the trained observer But screening and film examination are best carried out by a radiologist with experience of chest examination, a chest physician, or a tuberculosis officer

Lagging of the diaphragm and loss of translucency on the affected side are early findings in screening On the film, the first variation from normal lung shadows takes one of two main forms in the early stages of disease, according to the type of lesion This may be proliferative and fibrocaseous, or acute and exudative The former is by far the commoner in young adult tuberculosis, and usually presents a rounded area of loss of translucency in the inner or outer third of the subclavicular region on one side of the chest It is known as the "Assmann's focus" The loss of translucency is fairly even, though it tends to be densest in the centre To close inspection its edges disappear gradually into normal lung shadows, but viewing at a distance throws it into strong contrast to surrounding bronchial and vascular markings In many cases it has already broken down to cavity formation by the time of its discovery, when it shows as a well-defined annular shadow, often with a fluid level

The average early case has, however, progressed beyond the true Assmann's focus in another fashion, it has lost its rounded formation and is confused and irregular in outline, its edges, which denote advancing infiltration, merging into the shadows of consequent increased blood-supply, while its lower zone appears to be drawn out to join the increasing markings of draining bronchi that track towards the upper hilar region The background has a generalised fine loss of translucency, which is the X-ray evidence of progressive plastic pleurisy In this background, thrown into relief by distant viewing, can be seen several small scattered areas of heavier loss of translucency These are bunches of acini, organised or collapsed, and beginning to fuse They are evidence of the fibrotic character of the disease, acini that have already emptied their granulation tissue into accompanying bronchioles showing collapse, while others, unable to rid themselves of their exudate, are proceeding to caseation and organisation

Experience with mass radiography, by the opportunity it gives of studying large numbers of films, shows that there is a type of proliferative upper-zone disease that is much commoner than was formerly believed—true apical tuberculosis Here a lesion with the characteristics just described is found above the clavicle; only seldom is there present a true rounded area comparable with an Assmann's focus, although a suggestion of its previous presence can often be noted

Acute, non-fibrous, exudative phthisis is fortunately a much rarer finding Its X-ray shadows are in their ultimate characteristics not unlike those of bronchopneumonia They are alike in that they are bilateral, but where the cause is tuberculosis, they have edges which are more woolly, and they have between them areas of much more defined translucency Moreover, they are smaller, far more numerous, and tend to be confined to, or more marked in the upper and mid zones of the lung fields as against the predominantly lower zone shadows of simple bronchopneumonia, which always tend to follow the lines of the bronchial tree They are the evidence of inflammatory exudate filling the acini and caseating and disintegrating freely, because it is uncontrolled by the fibrous tissue and giant cells of the proliferative form of the disease This exudate fills the bronchi to produce the stethoscopic finding of coarse rhonchi and finer sibili of true tuberculous bronchitis, and it rapidly infects the lymph-nodes so that the hilar shadows become enlarged, matted and indistinct

MASS RADIOGRAPHY

Even from such a short description of the changes produced on an X-ray film by the earlier pathological developments of a tuberculous lung lesion, it is clear that we have in X-ray examination something quite definite to the expert eye, something which, even at its lowest valuation, is a visual indication of abnormality, calling for immediate and strict investigation In other words we have to hand a method of approach to diagnosis which can reverse the present one The doctor can seek out the patient He need not wait until the patient seeks him, driven by symptoms too often ignored until of long standing, and too often capable of other interpretations Moreover, as we shall presently see, these symptoms are too often delayed in their appearance until the disease is far past its early stages The proof for such a statement lies in the experience of the routine examination of certain selected groups of supposedly healthy subjects, which has been called mass radiography This was in its earliest experiments on smaller scales carried out as ordinary direct radiography of the chest by full-sized X-ray photographs, now it is possible to use apparatus suited to indirect or miniature radiography, whereby there is produced on a small film a reduced camera photograph of the full-size image on the fluorescent screen As against ordinary X-ray examination, it is much less costly, and it is so much faster that we can examine about seven times as many patients per day The type of apparatus using 35 mm *cine-camera* film is commonest in this country

A considerable amount of experience has been gained over the past five years from series of examinations made by direct radiography and fluoroscopy For example, large numbers have been covered among applicants for employment in the Mitcham Radio Works, the Brazil Fruit Trade and the Metropolitan Insurance Company of New York More recently there has been a large extension of the use of miniature radiography. R to he Royal Navy, the Army, the Royal Air Force, the Canadian and United States Armies and the Australian mperial Forces are passing through a scheme of mass adiography in increasing numbers

FINDINGS IN THE ROYAL AIR FORCE

Some of the results obtained in RAF and WAAF personnel (see table) will give an idea of what can be expected in examinations of the civil population Before considering them, it is well to note two special points First, all personnel in the series quoted had been through routine medical examination preceding mass radiography, n that all had been examined by National Service Boards some 6–12 months previously , in addition, all the men had had a stricter medical examination within the previous 6 months with a view to selection for special duties Those recruits therefore with declared symptoms or with physical signs found by previous examiners had already been weeded out before the remainder, the supposedly healthy, attended the Chest Radiography Sections where mass examinations are carried out Secondly, while, as already pointed out, the expert eye may be able to diagnose any form of chest disease by film examination only, the opportunities for error by individual opinion are so great and the implications to the suspect so serious that final diagnosis does not rest on X-ray interpretation alone The small film can show a variation from the normal, and when it is projected to a size about 8 in × 6 in , areas of abnormality are thrown into strong contrast with surrounding normal lung markings There the miniature film reaches its limit of usefulness—it can weed the abnormal from the normal For ultimate diagnosis, a large film, with its possibilities of greater detail, and full clinical and pathological examination are necessary in every case where an abnormality is noted Such exhaustive investigation has been carried out, with bed-observation where indicated, and no case has been considered tuberculous where there is any reasonable doubt of the diagnosis as judged by accepted modern criteria

The men in this series were X rayed by the Solus four-valve transformer set, exciting a rotating anode 'Dynamax' tube as described in a previous paper (*Lancet*, 1942, i, 609) The officer in charge is Flight Lieutenant L G Scott Of the 65 men (0 22%) considered to have active tuberculosis records show that 53 (82%) had physical signs to expert examination but 56 (86%) denied on close questioning the presence of any complaint which might be connected with their condition Of the remaining 9 the majority had usually cough, sometimes with sputum, which had been present for a few weeks only, and was considered by them to be due to a recent cold, to smoking, or to what they called "the usual morning cough which everybody has"

The women are from one unit under the charge of Flight-Lieutenant Clive The X-ray machine is of the Westinghouse condenser-discharge type, exciting a 'Machlett' stationary-anode tube

The numbers in both series are sufficient foundation for conclusions up to the age-group 25–29 The incidence of active disease is about 1 per 1000 more for women than for men at the age-group 20–24 (0 35% for men and 0 44% for women), but the incidence for women under 20 is more than double that for men (0 39% against 0 16%) Similarly among inactive cases, the incidence of disease in women under 20 is *four times* as great as among men, and one and a half times as great in the age-group 20–24, while the percentages approximate to equal in the age-group 25–29 The figures also show that among the supposedly healthy adolescent and young adult population between 18 and 24 there are some 3 per 1000 *who have unsuspected active tuberculosis*, and that more than 1 per 2000 is a potential source of infection, as he has, unknown to himself, a positive sputum The number of the population in these age-groups by the last census, corrected according to birth-rates at the end of the last war is, for England, Scotland and Wales together, some 5,000,000 The implication is obvious There are in these age-groups some 15,000 who *have unsuspected tuberculosis* , all of them require at least expert supervision and advice, and many need treatment for a period that *can be determined only* by close observation

The table gives the stage of disease found in cases considered active These cannot be strictly compared with Ministry of Health classifications in which symptoms and the presence or absence of positive sputum are considered , as already pointed out they refer to patients without admitted symptoms The classification is by extent of lung involvement only, as shown by films Nevertheless, it is a legitimate conclusion that some 25% more cases are found in the early stage of disease by mass radiography than by the present civilian methods of diagnosis Moreover it can be claimed that had the examination taken place earlier in the lives of those already in a moderately advanced stage, these figures would be better still Furthermore, all of them have a good chance of recovery in that their resistance is not yet broken , they are not yet ill with the disease

THE FUTURE

There is no proof that of those now passed as normal many will not break down in the future, immediate or more remote Periodic examination is a necessity Of the normals some are undoubtedly non-immune, and therefore not only particularly liable to infection but also especially dangerous to their fellows once they fall victims to the disease Their protection would be much increased if it were possible to extend examination to those already in the communities they are about to join , in other words mass radiography of the already employed as well as of those about to enter employment would confer a double benefit on the nation—a benefit to the individuals discovered, and a benefit to those they are liable to infect

Before embarking on any extension of mass radiography for the nation much preparatory work will be necessary. To the mind of the adult worker X-ray examination is associated with disease, and disease with economic disaster It will be hard, until he can see results for himself, to impress on him the benefits of early diagnosis. Legislation will have to come whereby he need no longer fear victimisation, the loss of his employment and the bogy of permanently reduced standards of life for himself and his family Present circumstances work against both the patient and the tuberculosis services , they hinder immediate treatment by worry and they militate against good end-results by

NUMBERS SHOWING X-RAY EVIDENCE OF PULMONARY TUBERCULOSIS

MALES

Age (yr)	Under 20	20–24	25–29	30–34	35 and over	Totals
Examined	13,431	10,795	3987	1830	85	30,130
Active	22 (0 16%)	38 (0 35%)	3 (0 08%)	2 (0 11%)	0	65* (0 22%)
Inactive	12 (0 09%)	39 (0 36%)	36 (0 9%)	20 (1 09%)	1 (1 17%)	108 (0 36%)
Total positive	34 (0 25%)	77 (0 71%)	39 (0 98%)	22 (1 20%)	1 (1 17%)	173 (0 58%)
FEMALES						
Examined	5404	2498	1096	359	182	9989
Active	21 (0 39%)	13 (0 44%)	2 (0 18%)	1 (0 28%)	1 (0 55%)	38* (0 38%)
Inactive	16 (0 38%)	18 (0 6%)	14 (1 28%)	2 (0 55%)	6 (3 3%)	56 (0 56%)
Total positive	37 (0 71%)	31 (1 04%)	16 (1 46%)	3 (0 83%)	7 (3.85%)	94 (0 94%)

* Of the cases considered active, sputum was positive in 17 males (26%) and 4 females (10 5%)

Stages by extent of lung involvement radiographically: Stage 1, males 35 (54%), females 18 (47%) , stage 2, males 21 (33%), females 18 (47%) , stage 3, males 9 (13%), females 2 (6%)

Tuberculous pleural effusion noted in 4 males and 1 female ; old tuberculous pleurisy in 3 males

Calcified nodules, calcified glands or both seen in 275 males (0 93%) and 124 females (1 2%).

Total number showing evidence of tuberculous infection males, 173 + 275 + 7 = 445 (1 51%) , females, 94 + 124 + 1 = 219 (2 2%)

In addition, 13 males and 10 females are under observation , of these, 4 males and 5 females are under 20 and 5 males and 3 *females* between 20 and 24 compelling the quiescent case to return to employment before he has attained arrest of his lesion They are an undoubted factor towards the gloomy after-histories of sanatorium-treated patients

Immediate hopes for the future control and treatment of pulmonary tuberculosis must be based on periodic mass radiography of the adolescent population, anything less comprehensive will fall short of the lessons indicated by the experience here analysed If we began now on a scheme of examination at school-leaving age and followed by annual review to the age of 30, we would cover those age-groups on which morbidity and mortality fall most heavily Initial cost would shortly be offset by the saving of vast sums of money now spent on hospital treatment of advanced cases, this money gives a disappointingly poor return in social happiness and nine-tenths of it is a loss to national economy Indeed, we must soon not only solve the problem of the early diagnosis of pulmonary tuberculosis but be ready to act on a diagnosis of early pulmonary tuberculosis

I am indebted to Squadron Leader H J Trenchard for his help in preparing the tables

PROFLAVINE POWDER IN WOUND THERAPY

G. A G MITCHELL
M B, CH M ABERD
MAJOR RAMC

G A H BUTTLE
M A CAMB, M R C S
LIEUT COLONEL RAMC

Officers Commanding an Orthopædic Centre and a Base Transfusion Unit, Middle East Force

DURING the present war chemotherapy has been extensively used for the treatment of the wounded and appears to have been effective in reducing the incidence of infections, especially those due to hæmolytic streptococci, which were very common in the Great War but are less common in this one There has been an improvement even between two phases of the present campaign In the first Libyan offensive (winter 1940–41) the sulphanilamide drugs were employed only sporadically on the L of C, usually in completely inadequate dosage, and on admission to base hospitals the wounds were often infected with hæmolytic streptococci Thus out of 14 cases admitted to one ward from one convoy in January, 1941, 8 were infected with this organism In the second Libyan campaign (winter 1941–42) sulphonamides were given by mouth and used locally in almost every suitable case and the doses were more adequate and regular As a result the incidence of streptococcal wound infections diminished, while other infections less amenable to chemotherapy, such as those due to staphylococci, *Bacillus proteus*, *B pyocyaneus*, &c, became relatively more common But there are still some wounded men who, either in spite of chemotherapy or more probably owing to its inadequate application, arrive at the base with their wounds in a grossly infected and purulent condition In these cases the sulphanilamide drugs can do no more than prevent the spread of infection and they have comparatively little influence on the course of the local suppuration Such wounds are commonly deep or extensive, often involve bones or joints, mixed infections are almost the rule, and they have sometimes proved extremely slow to heal

These intractable wounds are a distinct problem in any hospital where large numbers of seriously wounded men are treated, and they are especially difficult in orthopædic centres where many of the worst cases are concentrated In one of these centres it was decided to try proflavine powder in their treatment, because certain experimental work to be quoted later had shown that this substance was relatively non-toxic and had a strong bactericidal effect on a great variety of organisms The first case in which the antiseptic was used was dangerously ill and the results were dramatic They have not yet been quite equalled in any other case, but since then proflavine powder has been used [illegible] of all grades of severity and the res[illegible] ently encouraging to warrant descri[illegible] ribed below may be regarded as [illegible] be expected from the use [illegible] tion used throughout wa[illegible] hate (BDH)

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CASE-RECORDS

CASE 1—A corporal, aged 28, was wounded by a shell burst on Dec 8, 1941 On admission 7 days after wounding his condition was poor and his arm, which was fixed in an abduction plaster, was uncomfortable Next day, under general anæsthesia, the plaster was removed, revealing a large infected wound about 6½ in × 4 in occupying most of the left deltoid area Through this wound a large shell fragment had passed, shattering the upper end of the humeral shaft, and coming to rest in the axilla below the main neurovascular bundle Several loose bone fragments and metal splinters were removed and the wound was dressed with powdered sulphanilamide (10 grammes), covered with 'Vaseline' gauze, and the arm refixed in a plaster abduction spica Culture of the pus gave non-hæmolytic streptococci, diphtheroids and *B proteus*, so the patient was given sulphanilamide by mouth (48 g spread over 7 days) During this postoperative period his condition improved for about 10 days and then his temperature began to fluctuate between 101 and 103 4° F and pulse rate between 100 and 120 per min, while he began to complain of much pain in the shoulder

On Dec 30 (15 days after admission), under 'Pentothal' *anæsthesia, the plaster was removed and* an abscess was seen pointing below the left clavicle It was opened by one incision beneath the clavicle and a counter incision near the posterior axillary fold, a shell fragment measuring 2 in × 1 in was removed from the axilla Culture of the pus gave non-hæmolytic streptococci, *Staphylococcus albus* and *B proteus* Sulphanilamide, 10 g, was introduced into the abscess cavity and the arm refixed in an abduction plaster After operation 3 pints of blood was given by drip transfusion, and also 30 g sulphathiazole spread over 4 days

Again he improved, this time for about 3 weeks, and then his temperature began to swing up to 103° F and his pulse was consistently over 100 per min On Jan 26, 1942, another 3 pints of blood and 2 pints of glucose saline were given by drip transfusion, the plaster spica being removed and the arm merely fixed in a sling At this period his general condition was low, his appetite was poor, he was very thin, and he sweated profusely As the closed plaster *technique had failed to produce good* results, it was decided to change over to regular dressings, and all the usual drugs were tried in succession—eusol, 1/1000 acriflavine, hydrogen peroxide, sulphanilamide, and hypertonic sodium sulphate Despite everything his condition deteriorated and the discharge was profuse, coming mainly from the infraclavicular wound, which now resembled a small tea cup in size and shape (2½ in diameter × 2½ in deep)

On Feb 15, 2 g of proflavine powder was introduced through the left infraclavicular wound into the axilla The result was dramatic, the discharge drying up completely in 3–4 days and the general condition showing great improvement By Feb 28 the wound below the clavicle was healed, an astonishing occurrence *for a wound of its size* and chronicity A week later the incision near the posterior axillary fold was also healed The wound in the deltoid region also diminished in size (though less rapidly), and now (April 27) it is almost dry and is covered by a thick scab Culture from this wound still gives *B proteus* The man felt so much better that he was allowed up in a chair on Feb 25, and a week later he was able to walk The improvement has been maintained and he has recovered much strength in his upper limb, but abduction is still weak owing to the gross destruction of the deltoid muscle

CASE 2—A private, aged 27, received a bullet wound on Jan 31, 1942, which passed through the left elbow, producing comminution of the radius and capitellum On admission to a base hospital, 8 days later, his general condition was poor and the plaster on his left upper limb was stained with discharge On Feb 12, under pentothal anæsthesia, the plaster was removed and he was seen to have two wounds, an entry wound *just lateral to the* olecranon and an exit anteriorly in the antecubital fossa Both wounds were discharging freely and the elbow joint was swollen, due to septic arthritis The joint space was *opened freely*, 5 g sulphanilamide introduced and the wounds covered with vaseline gauze An abscess of the forearm was opened and drained by two incisions It was *found impossible* to straighten the elbow (with a view to applying extension) owing to the risk of hæmorrhage from the stretched brachial artery in the highly septic wound A plaster was applied with a window cut to allow free discharge, and the man [illegible] given g sulphanilamide by mouth spread over 6 days Cultures the pus gave a pure growth of hæmolytic streptococci

His general condition slowly deteriorated, and when the laster was changed on March 6 the wounds were still ischarging and the joint condition was no better In ddition he had developed a small abscess along the inner de of the arm, which was incised Sulphanilamide was gain introduced into the wounds After this operation he emained comatose for 3 days and it was assumed that this as due to the administration of pentothal in his toxic state lis blood urea at this stage rose to 42 mg per 100 c cm , is blood-culture was sterile After receiving 3 pints of lood, 350 c cm glucose saline and 700 c cm normal saline, e improved considerably, but the discharge from the elbow ontinued to be profuse Cultures of the pus still gave a rowth of hæmolytic streptococci

On March 20, under gas and oxygen anæsthesia, the plaster ras again changed The local condition showed no improve nent and pus was draining freely from the elbow and from he incisions in the arm and forearm Proflavine powder ras introduced into the elbow joint and also into the arm nd forearm wounds, about 2 g in all being employed , a resh plaster was then applied After this operation the nan stated that his elbow felt more comfortable than it had lone since he was wounded, his appetite improved, he slept nuch better and there was a noticeable change in his general ealth Within 10 days he was able to get up and since hen his condition has improved steadily

A month later when his plaster was changed the wounds of the arm and forearm were practically healed, the elbow wounds were smaller and almost dry, and now only *B proteus* could be grown in cultures

CASE 3 —A warrant officer, aged 29, sustained multiple wounds in a bomb explosion on Nov 21, 1941 His most serious injury was a penetrating wound of the right knee, with partial comminution of the lateral femoral condyle and outer margin of patella He was treated in a field ambulance within a few hours, the knee wounds were cleaned up and sutured and the limb fixed in a posterior plaster slab He did not arrive at the base until 12 days later , by then he was very ill He arrived late at night, in no state to stand operation, so his wounds were merely dressed and he was given morphia and 3 pints of blood by drip transfusion Next morning he was slightly better, and as it was clear that the right knee was infected he was given pentothal and the stitches were removed from a large lacerated wound just above the patella Pus escaped under great tension (*Strep hæmolyticus* and *Strep viridans*) , 10 g sulphanilamide was inserted into the joint, the wound was left widely open and he was fixed on a Braun's frame with skin extension Before admission he had received sporadic doses of sulpha pyridine, and after admission he was given 3 tablets 4 hourly for 4 days Then he complained of sore throat (culture gave hæmoltyic streptococci) and as his white cell count was only 9400 the chemotherapy was stopped and he was given another 4 pints of blood His convalescence was very stormy and amputation through the right thigh was considered several times, but by the end of January, 7 weeks after admission, it was clear that he was on the up grade During January successive cultures of pus at weekly intervals gave the following results (*a*) *Strept viridans* and *Staph aureus* , (*b*) *Staph aureus* and non hæmolytic streptococci , (*c*) *Staph aureus* , (*d*) *Staph aureus* and *B proteus* At this stage the discharge was very free and the temperature and pulse rate had subsided to normal, so fixation in plaster was employed

On April 24 the wound above the right knee was still large ($4\frac{1}{2}$ in × 2 in) and discharging very freely (*Staph aureus* and *B proteus*) when it was decided to use proflavine powder Approximately one gramme was introduced into the supra patellar synovial pouch the lateral side of the knee and behind the patella and the leg was fixed in a closed plaster extending from the upper thigh to the ankle A week later he was able to move around on crutches, and whereas previously the discharge had been very profuse it now dried up almost completely as judged by the condition of the plaster, which remained firm and dry When the plaster was removed a month later the wound only measured about 2 in × $\frac{1}{4}$ in It was completely healed by mid April and has not broken down since, although the patient is walking about unaided The knee is almost completely stiff, but considering that he had a severe septic arthritis the result is satisfactory, and undoubtedly the local improvement dated from the use of proflavine

CASES 4 AND 5 —Two other similar cases of septic arthritis of the knee due to war wounds might be quoted where the results were equally satisfactory and where the improvement was definitely more rapid after the use of proflavine One of these men had also a septic arthritis of the elbow which responded favourably to proflavine, and it is worth mentioning that in both cases sulphanilamide and sulphathiazole had been fully exploited before proflavine was employed

CASE 6 —A driver, aged 23, was involved in a motor-cycle accident on March 4, 1942 His only serious injury was a penetrating wound of the right knee with slight comminution of the lateral femoral condyle and patella He was operated on in an advanced hospital within 5 hours of the accident, the wound edges were excised, the skin edges only were sutured, and plaster was applied from the thigh to the foot On admission to a base hospital 3 days later the man looked ill, his toes were very blue and swollen, and he complained of much pain in the right leg and knee The plaster was split at once with immediate relief, but next day he was again in great pain, so pentothal was given and the plaster was completely removed A 4 in wound on the outer side of the knee was found to be closed with two sutures, and when these were removed thin pus escaped freely from the joint, along with pieces of sloughing synovial membrane A fresh posterolateral drainage incision was made in a dependent position, about 10 g of powdered sulphanilamide was introduced into the joint, the wounds were left completely open, and the limb was fixed in a Braun's frame with extension by skin traction He was started on a course of sulphanilamide by mouth, but this was stopped after he had received 18 g because the report on the pus (received on March 11) showed that the infecting organism was a hæmolytic *Staph aureus*

His general condition improved only temporarily after operation and 3 days later he was dangerously ill, with severe confusion and delirium and a very poor pulse When the bacteriological report was obtained on March 11 it was decided to use proflavine, and on March 12 pentothal was given and 2 g proflavine was dusted into the joint and wounds Next day he was no better, but 2 days later there was obvious improvement, especially in the mental condition, and he began to evince interest in food and in his surroundings By March 20 he had little or no pain and the discharge was so much diminished that the limb was encased in plaster This plaster was retained for 3 weeks and then was changed under pentothal anæsthesia The size of the original wound had diminished by about a half and the counter incision was practically healed , culture of the pus gave *B proteus* only Now he is much better generally and is able to get around on crutches, while the discharge has almost ceased

The improvement in this case was evident within 2 days after using proflavine, and it has been maintained, whereas the first operation at the base hospital (free drainage plus sulphanilamide) produced only temporary improvement

CASE 7 —A private, aged 27, was shot through the left wrist on March 21, 1942 He sustained fractures of the lower end of the radius and adjacent carpal bones The wounds were excised and plaster applied in a field ambulance the day after wounding On admission to a base hospital 8 days later his general condition was poor and it deteriorated in the next few days On April 2 the temperature swung up to 104° F., his pulse was 120 and he became delirious On April 3, under pentothal anæsthesia, his plaster was removed and it was clear that he had a septic arthritis of the wrist , the infecting organism was a hæmolytic *Staph aureus* Free drainage was provided, 0 75 g proflavine was introduced into the wounds and a fresh plaster applied His temperature and pulse were almost down to normal within 24 hours, his pain had gone, his delirium ceased and his general condition improved so rapidly that he was allowed up 5 days later

The plaster was changed on April 25 By then the wounds were much smaller and the discharge scanty, but hæmolytic *Staph aureus* could still be grown on culture Now, on April 27, his general condition is excellent

The improvement in this patient after the operation and the use of proflavine seemed more rapid than in cases of similar severity where this drug was not employed For examples, two officers with almost identical lesions, whose treatment began in December, 1941, made much slower progress

CASE 8 —This minor case is quoted to show that proflavine does not necessarily delay healing

A medical officer developed septic sores of his right middle and ring fingers, and the areas spread slowly despite local applications of sulphanilamide powder for 9–10 days, and administration of 12 g sulphanilamide by mouth in 4 days. He consulted one of us 10 days after the onset and it was found that he had two spreading ulcers, each 1¼ in × ⅞ in in extent, over the dorsal aspects of the proximal interphalangeal joints of the right middle and ring fingers, with enlargement and tenderness of the epitrochlear gland. Culture of the pus gave *Strep hæmolyticus* and *Staph aureus*. The dead skin was cut away, and as chemotherapy had proved unsuccessful it was decided to change the treatment. Proflavine powder was therefore applied to the raw surfaces, and next day a thin brownish pellicle had formed over the areas. Two days later pus had accumulated under the pellicle on the middle finger, so the pellicle was cut away and fresh proflavine applied. The area on the ring finger was healed within a week and the middle finger lesion in 11 days after the start of proflavine therapy. The lymphadenitis subsided pari passu with the local improvement.

Compared with many similar infections treated by other methods, the healing in this case was equally rapid, and the new skin was supple, not interfering in any way with joint movements. The interesting fact also emerged that proflavine locally was more effective than sulphanilamide in controlling a mixed *Strep hæmolyticus* and *Staph aureus* infection in this case.

DISCUSSION

Acriflavine has always been the favourite among the acridine group of antiseptics despite the fact that a number of investigators such as Albert and others (1938), Russell and Falconer (1940–41), Falconer (1940), and Manifold (1941) have all emphasised as a result of their experimental work that while proflavine is as effective as other flavine compounds in regard to its bactericidal action it is less toxic than acriflavine. It has also been shown that 2 7-diaminoacridine hydrochloride is even less toxic than proflavine (2 8-diaminoacridine sulphate), and Manifold (1941) summarises the matter thus: "Acriflavine is a mixture and presumably may vary quite widely in composition from time to time and from one manufacturer to another. It is not significantly superior bacteriostatically to either proflavine sulphate or 2 7-diaminoacridine hydrochloride, both of which compounds, particularly the 2 . 7-diaminoacridine hydrochloride, have a minimal toxic effect on the tissues. On these grounds it is felt that in spite of the wide interest in acriflavine its use as a local or internal antiseptic should be discouraged, and proflavine sulphate or more particularly 2 7-diaminoacridine hydrochloride substituted, since these are pure compounds of invariable composition and low toxicity to the tissues." Hawking (1941) found that "Applied in strong concentration proflavine will certainly prevent infection of a wound by anaerobes subsequently inserted. On reopening at the third day, wounds which had been treated with 1% or 0 1% solutions showed fairly healthy tissues and only small numbers of bacilli." He concludes that "in view of the mediocre results obtained with acridine compounds in the last war (presumably through inability to reach bacteria situated inside the tissues), the usefulness of proflavine as a wound antiseptic is probably limited." Anderson (1940) found that 1/10,000 solution of proflavine was not effective in treating wounds of mice infected with *Vibrion septique*, but 2–10 mg of proflavine powder inserted into the wounds produced as good a result as an equivalent amount of sulphapyridine, although healing was somewhat delayed.

The test of any therapeutic agent by clinical means can never approach in exactitude the results achieved under laboratory conditions where the type of wound and infection, and the factors of time and treatment can all be controlled. In clinical practice no two wounds are exactly alike as regards size, structures involved and degree of infection, while there are other possible confusing factors such as interference with blood or nerve-supply, the varying times which elapse between wounding and the institution of treatment, and variations in the actual mode of treatment before the patient arrives at a base hospital. On the other hand, results obtained in a laboratory are not always an exact guide to what occurs when the same drug is used in man, and few research workers investigating wound infections produce as severe lesions in their experimental animals as those caused by high explosives in man with their often severe destruction of bones, joints and soft tissues. In experimental work it is convenient to infect the wounds with a virulent organism which will kill all untreated animals within 24 hours, and for this reason it is not possible to delay treatment for more than a few hours after infection; there is never time to allow pus formation in the wound before treatment is started. In clinical practice wounds are infected with a great variety of organisms, which are not usually very virulent, but treatment is often delayed for several days, by which time the wound is thoroughly purulent. The presence of pus is known to have an adverse influence on the action of the sulphonamide drugs. Such considerations must be borne in mind in connexion with the subsequent discussion, because the great majority of our cases had been wounded 5–12 days before they came under our care, they had passed through three to eight different medical units before arrival, in these units a great diversity of treatments had been employed, and most of the cases were more or less heavily infected when first seen.

An extensive experience in the treatment of wounds of all grades of severity showed that certain of them were very resistant to treatment. Severe wounds of bones and joints in particular were a problem, for while some did surprisingly well others continued to discharge despite the removal of foreign bodies or sequestra and the institution of free drainage; the presence of such large discharging wounds acted as a constant drain on the strength of the patient. Every suitable case, and that included the majority, was treated by the closed plaster method; sulphanilamide, sulphapyridine and sulphathiazole (locally, by mouth and occasionally intravenously) were used according to the type of case and the nature of the infection. It has not yet been possible to try sulphadiazine except in a few cases owing to lack of supplies. Various forms of treatment, apart from routine chemotherapy and closed plaster, were tried in resistant cases, including plain saline or vaseline dressings, hypertonic salt solutions (sodium chloride and sodium sulphate), urea, eusol, acriflavine (1/1000), gentian violet, brilliant green, hydrogen peroxide, and glycerin and sulphanilamide solutions; blood transfusions whenever necessary; reduction of the carbohydrate intake, and regular courses of ascorbic acid; and physiotherapeutic methods in the form of ultraviolet light, radiant heat and infrared radiations were also employed. A number of cases, however, failed to respond despite everything tried, and it was this failure which led us to attempt a new treatment in the form of proflavine powder dusted into the wounds.

The amount of proflavine used therapeutically has never exceeded 2 g in any one case, and usually only about 0 5 g or less was employed, depending on the size of the lesion. It was introduced into cavities by means of a small Volkmann's scoop or the end of a blunt dissector, or in cases where there was an extensive wound it was dusted over the entire surface and evenly distributed with a spatula or scalpel handle. It was never employed on more than 2 or 3 consecutive occasions, 4–28 days elapsing between the applications. When used prophylactically the amount varied according to the size of the lesion, but was usually about 0 25 g, mixed with 2–5 g powdered sulphanilamide. So far the two drugs have seldom been combined during the treatment of established infections. The drug used throughout was proflavine sulphate (2 8-diaminoacridine sulphate) as we had no supplies of 2 7-diaminoacridine hydrochloride.

From the prophylactic aspect, it is impossible to assess the relative value of proflavine and sulphanilamide because the two drugs have always been used together, and then only as an adjunct to surgical measures. In 7 cases of compound fracture of the tibia and fibula and one compound fracture-dislocation of the wrist, all heavily contaminated, where early operation was combined with the prophylactic use of proflavine and sulphanilamide, none subsequently developed infection. There is no evidence that repair of either the bones or soft tissues has been delayed, and this is important, for it would be foolish to use any substance to combat a problematical infection if it interfered appreciably with healing. As regards sulphanilamide this point has already been established after its [illegible] hundreds of ases, including many infected compound fractures, where healing has been almost as rapid as in simple ases Therefore for prophylaxis sulphanilamide should always be preferred, and until further evidence accumulates as to the effect on healing it would be unwise to use proflavine as a prophylactic agent except in small doses (0 25 g or less), such small amounts may be quite sufficient to prevent the development of staphylococcal infections

We are on surer ground when we come to discuss the therapeutic effect of proflavine in cases of established infection Where staphylococci are the infecting organisms proflavine has proved more effective in controlling or eliminating the infection than any other drug or method of treatment—e g , sulphathiazole—so far tried It should be made clear that proflavine has never been used except as a local application Sometimes the staphylococci disappear entirely, but even if they persist both the local and general condition improve after treatment When some operative procedure is combined with the use of the powder, it is impossible to tell how much of the improvement is due to the surgeon and how much to the drug , but by contrast with other similar cases we feel certain that those in which proflavine was used did the better Thus two cases of septic arthritis (cases 6 and 7), one of the knee and the other of the wrist, both infected with hæmolytic *Staph aureus* and both dangerously ill, improved rapidly after the institution of free drainage and the instillation of pure proflavine Doubtless the operation was the chief factor in the improvement but by comparison with other cases of septic arthritis it seemed to be more rapid than usual and it was maintained Case 1 is important in this respect because the proflavine was the only measure employed immediately before his dramatic change for the better

The benefits of proflavine treatment are not confined to patients with staphylococcal infections Indeed many cases have shown improvement irrespective of the type of infecting organisms, and when used in a highly concentrated form proflavine appears to be active against all the common pyogenic organisms *B proteus*, however, appears to be more resistant to its action than any of the other common organisms, and this bacillus has an annoying habit of appearing in wounds despite every precaution to prevent infection , fortunately it does not appear to have a high toxigenicity It will be noted also that proflavine may produce good results in cases which have failed to respond to sulphanilamide and other drugs of this series It is not suggested that proflavine should supplant sulphanilamide and its allies as a prophylactic or therapeutic agent, except perhaps in cases where the infection is known to be staphylococcal In such cases local application of proflavine, with the general administration of sulphadiazine or sulphathiazole, may be found the best combination

The effect of proflavine in drying up a wound is sometimes remarkable, and often a thin eschar forms over the wound, not dissimilar in consistence to that produced by tannic acid in burns, while, just as in tannic acid therapy, pus occasionally forms under the pellicle When the discharge is very profuse this process is less liable to occur In some cases a brownish scab forms over the wound which is slowly raised from the surface by the formation of a gelatinous material beneath, possibly coagulated serum In 5 or 6 out of the 80 cases of this series where proflavine has been employed there has been no improvement Proflavine has often been employed in conjunction with the closed plaster technique, and in cases where the wound is not so covered dressings are performed as infrequently as possible—every fourth to seventh day depending on the amount of discharge

Several of the cases quoted supply evidence that, contrary to expectations derived from experimental work, healing is not apparently delayed, but in this connexion one case should be quoted An officer with a chronic tibial abscess, the sequel of a gunshot wound, had “ saucerisation ” performed The extensive bone cavity was filled with a mixture of about 10 g sulphanilamide and 2 g proflavine, and after 6 weeks practically no new bone had formed Ten weeks after the operation new bone was forming and the cavity was healing, but the process had been slower than usual Whether this was the result of using the chemicals or whether it was due to other causes we cannot tell Against this case we can place the undoubted fact that in 79 cases with bone, joint and soft-tissue injuries no appreciable delay in healing has occurred

Most patients find the dressing painless and unirritating, although a few complain of a slight burning sensation which soon abates No general toxic manifestations, such as skin eruptions, albuminuria, jaundice, nausea, vomiting or headache, have been encountered

SUMMARY

Proflavine is much less toxic than acriflavine and it has been used in pure form as a dressing for certain intractable wounds

So far it has been used therapeutically in 80 cases, with beneficial results in almost every case

Where staphylococci are the infecting organisms, proflavine has proved more efficient in controlling or eliminating infection than any other drug so far tried, and many cases with mixed infections have also responded well

With the possible exception of one case, no interference with healing has been noted

Most patients find the dressing painless, and no general toxic manifestations have been noted

Our thanks are due to Colonel H D F Brand, OC 15th Scottish General Hospital, for permission to publish this article, to the sisters and orderlies in the orthopædic wards and theatre who have assisted in the clinical work, and to the staff of the pathological laboratory who have examined and reported on so many specimens

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NICOTINIC ACID IN TREATMENT OF ANGINA PECTORIS

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THE use of nicotinic acid in the treatment of pellagra has achieved much prominence in the last few years, especially in the United States In view of the advantages claimed for this substance in pellagrous psychosis, it was decided that a trial of its possibilities should be made with patients whose mental symptoms were of a similar, though not completely corresponding type These investigations have led to the present work Six cases of angina pectoris have been treated with nicotinic acid, and the results in this series appear to be remarkably uniform and lasting

Administration of the drug by mouth caused in several cases a noticeable decrease in number and severity of attacks, but in others the effect was transient, possibly because of interference with absorption or interaction of chemical substances in the gastric secretion Moreover the drug could not be discontinued without relapse, and the treatment appeared therefore to be merely symptomatic Intravenous administration heightened the efficacy of the drug It was therefore decided to discard tablets of nicotinic acid, in order to obtain equal conditions for each case and an evaluation of the treatment after its discontinuation A drip infusion of a 0 05% solution of nicotinic acid was chosen to overcome differences in susceptibility to nicotinic acid , isotonic solutions are rapidly absorbed, giving sufficient concentration of the medicament in a short time One infusion containing 100–300 mg produced as a rule a remarkably beneficial result, which was maximal after 12–24 hours Further infusions seemed to cause a definite stabilisation in the condition of the patients, who became free from anginal attacks after several weeks, the worst cases reacting best In most cases it was considered sufficient to give six infusions, so that treatment finished after approximately 3 weeks, though in some cases more treatment may be required We now have 6 cases showing complete or almost complete regression of symptoms of angina pectoria over a period of 3–7 months after completing the course of treatment, 3 cases have actually resumed heavy manual work

CASE-RECORDS

CASE 1 —A builder, aged 65, who had always been healthy until the first attack of substernal pain 2 years ago Continued to work with the help of nitroglycerin tablets The pain, constricting and burning in type, radiating into both arms, became gradually worse, especially in cold weather In autumn, 1941, frequent attacks of pain caused him to retire from work No dyspnœa at rest, but slightly breathless on exertion Physical examination of the heart did not reveal any enlargement, sounds faint, no murmur, resting BP 120/80 mm Hg Pulse regular, 84 per min, radial and retinal vessels appeared normal He was tested to ascertain the amount of effort necessary to cause anginal pain, 17 steps of the usual type of staircase caused intense pain, with BP 180/110 mm Hg, pulse 110 Treatment started Feb 2, 1942 Next day reduction in pain was noticed, and patient felt able to walk a short distance, after the 8th infusion on March 21, he could dig a plot 10 ft by 20 ft in his garden in less than an hour without pain After the 10th treatment he was tested again, 193 steps of the same staircase were mounted, going very quickly up and down This exercise was interrupted because no pain was felt, and it appeared unnecessary to continue the test When re examined on July 7, 1942, he was doing the work of a man in good health, did not take any drugs, and had no pain, though he carefully abstains from sudden exertion

CASE 2 —A cotton spinner, aged 50 No history of serious illness Started to become breathless on exertion 8 months ago, 2 months later had acute attacks of heartburn and indigestion, especially after an effort He took alkaline powders, and they helped to a certain extent Again 2 months later, after a brisk walk, had intense substernal pain and had to stop This pain forced him to give up work, because it reappeared frequently from that time after exertion Examination on March 10, 1942, showed no dyspnœa at rest, but breathlessness on exercise No signs of congestive failure or cardiac enlargement, heart sounds faint Systolic murmur over base of heart No abnormality of peripheral and retinal vessels Pulse 90 per min Resting BP 130/90 mm Hg Wassermann reaction negative No signs of renal defect On mounting a staircase, 38 steps caused an anginal attack, which forced him to stop BP shortly afterwards, 170/70 mm Hg, pulse 96 per min Nine minutes later, at 4 24 PM, infusion was started, BP fell from 135/75 to 118/80 mm Hg Pulse rate fell from 90 to 68, but later remained around 78 per min Infusion finished at 5 40 PM At 5 45 the patient was retested, 95 steps of the same staircase were mounted very quickly Became breathless, but did not experience any pain at the end of this exercise Next day was tested by a walk of ¾ mile, slightly uphill Became very breathless but felt no pain Three infusions were given He felt fit after this treatment, and has since resumed work Re examined on July 24, 1942 Has been employed at his former job for the last 3½ months Does hard work every day, but abstains from sudden exertion, has not experienced any pain, and feels extremely fit

CASE 3 —A farm hand, aged 27, with congenital syphilis No external signs of syphilis Never been seriously ill and is in fine physical condition WR ++ Examination of CNS entirely negative, no signs of heart failure, no dyspnœa on exertion, no enlargement of heart and no murmur, second aortic sound slightly accentuated Pulse regular, 76 per min, BP 130/80 mm Hg Came under observation on account of unbearable pain in chest, radiating down inner side of left arm, and once into both arms First attack occurred in July, 1941, after effort On two occasions pain became unbearable, and he had to lie down and keep immobile for 5 minutes before it ceased Left arm was sore during and after attacks of pain, which usually lasted 4–5 min, unless interrupted by a nitroglycerin tablet Received antisyphilitic treatment, starting with small doses of iodine and bismuth Later neoarsphenamine was given and well tolerated No change in the anginal syndrome Treatment with nicotinic acid started Jan 23, 1942 Soon after first infusion reported a decrease in pain during attacks After three infusions took up work again, and has remained a very active worker Has no pain except when starting a sudden and sustained effort Even then he has not to stop but only to slow down to get relief It seems evident that the orifices of the coronary arteries have been narrowed by a syphilitic process and the anginal pain therefore returns when the structural changes do not allow a sufficient amount of blood to enter or to leave the coronary system

CASE 4 —A bus driver, aged 58 Was forced to give up work 5 years ago on account of mitral stenosis Very dyspnœic on slightest exertion, has a persistent irritating cough Radial vessels slightly harder than normal Pulse irregular (frequent extrasystoles) At times pulse grossly irregular, due to transient auricular fibrillation BP 180/110 mm Hg In 1938 experienced first substernal pain Afterwards attacks came on at any time after slight exertion and after food When mild they had the character of acute indigestion and fullness in the chest, when stronger a burning pain radiated into both arms, especially down the inner side of left arm First treatment Feb 4, 1942 Morning after infusion was able to rise without pain and to start dressing immediately, instead of sitting on the edge of the bed to overcome the first anginal attack Received six infusions within 3 weeks Has had no further anginal attacks Now works in his wife's business, can walk 5 miles, and is generally active and independent

CASE 5 —A widow, aged 62 Was a cotton spinner until 4 years ago, since when has not worked because of pain in chest, which became gradually worse, was burning in character radiating into left arm Pain easily caused by short walk or by exercise after a meal Worse in cold weather No dyspnœa at rest, but breathless on exertion Physical and X ray examination show only moderate enlargement of heart, *but well marked dilatation of aorta* Blowing diastolic murmur in aortic area Water hammer pulse Radial and retinal vessels slightly tortuous WR negative Resting BP 135/85 After first infusion on May 4, 1942, much better nights Acute attacks of pain disappeared entirely, but still felt oppression in chest during long walk After third infusion this oppression also disappeared Now undertakes much more exercise, and has regained her old confidence Tested on a walk, approximately 1 mile, going slightly uphill no pain but tired and breathless

CASE 6 —A gardener, aged 60 Illness started in May, 1941, with attack of breathlessness on exertion Stayed off work for a week Shortly afterwards had acute attack of pain in chest while lifting window of a greenhouse Attack was severe, lasting for a long time, and only passed slowly away on sitting down Left arm remained sore for long time afterwards Since then pain has frequently recurred Only caused by exertion, is continuous, and passes away when he rests It is of burning and gripping type Not breathless at rest, no signs of cardiac failure or of a vascular lesion Heart shows neither clinical nor X ray signs of enlargement Peripheral and retinal vessels slightly thickened and tortuous WR negative Resting BP 165/90 mm Hg Pulse rate 84 Average number of steps of usual type of staircase required to produce pain was 60 BP afterwards 210/110 Pulse rate 120 Abnormally breathless First treatment March 19, 1942 Improved considerably Retested after third infusion on May 27 Amount of exercise tolerated now limited by breathlessness, not by pain Has had no anginal attack since first infusion, sleeps much better, has taken up light work again, and regained some of his old confidence, though he still abstains from exertion

PHARMACOLOGY

Most of the clinical work with nicotinic acid, apart from pellagra, was based on its vasodilating action, which appears to be independent of its action as a vitamin This effect is, however, of short duration, and elimination of the drug by the body is probably completed within a few days To account for the lasting results in the foregoing cases, we have compared the action of nicotinic acid with that of histamine, both of which have a heterocyclic ring —N— with a substituent group in beta position Though there is no obvious chemical relation, a resemblance between the pharmacological action of histamine and nicotinic acid was found

The well-known reactions following a subcutaneous or intravenous injection of 0 1 mg of histamine sodium phosphate can be nearly reproduced by a 50–500 times larger quantity of nicotinic acid The effects of such a dose of nicotinic acid are as follows

On smooth muscle —No effects in normal persons, except in two who complained of severe cramp like pain in the epigastrium after 5 mg of nicotinic acid intr A delayed action was noted in 3 asthmatics, 2 reported severe asthmatic attacks after taking 50 mg of nicotinic acid by mouth, the third, who received 100 mg by intravenous infusion, reacted with a violent attack 15 hours later. In 4 other cases, however, the effect appeared so beneficial that ephedrine was replaced by nicotinic acid.

On secretion.—Rise in the volume and acidity of the gastric secretion after 50 mg of nicotinic acid intravenously. In 2 patients with a fasting achlorhydria, hydrochloric acid appeared in increasing amounts, though the effect was not so great as that produced by histamine. Sweating was never noticed, even with doses of 600 mg, though Forgan (1939) mentioned this action.

On cerebrospinal fluid.—Slight rise in pressure.

On blood vessels.—Moore (1940) reports that nicotinic acid produces vasodilatation and increased blood flow in the brain and spinal cord of the cat. Furtado[1] confirmed the cerebral vasodilator action of nicotinic acid. Adams and Robinson (1941) utilised the vasodilatory effect of nicotinic acid with success in 7 cases of trigeminal neuralgia. A headache similar in type to that following an intravenous injection of 0·1 mg histamine could be produced in 4 patients. It was necessary to give the infusion rapidly. A sense of fullness is first felt, which increases to a sharp headache.

On the heart and blood vessels.—The responses to a given dose vary in different subjects, and in the same subject from day to day. Because of these variations, every observation has been followed by several control tests, to test and possibly to eliminate the effect of a modifying factor on pulse rate and blood pressure. Healthy adults are far less affected than patients, especially those with hypertension. Usually the effects begin within ½–2 min of the start of the infusion, simultaneously with the flushing of the face and the upper part of the body, the systolic blood-pressure falls 5–40 mm Hg. The diastolic pressure was little altered, but sometimes rose a few mm. The striking fact which emerges from these observations is the difference between histamine and nicotinic acid in their action on the heart rate. The former causes a distinct increase, the latter in most cases an equally distinct slowing. The reduction coincides in each case with a fall in blood-pressure, and this relationship cannot be accidental, because it occurred in more than 100 infusions and 40 different patients, though in an equal number of normal controls the results were less definite.

DISCUSSION

The degree of central vagal tone, which exerts a prevailing influence on the heart-rate, runs parallel with the height of the blood-pressure. Nitrites, like histamine, cause a well-marked fall in blood-pressure, and thereby an acceleration in pulse-rate, the action on the vagal tone being a sequel to the change in blood-pressure, and only to a slight degree a direct action on the vagus itself. The question therefore remains how nicotinic acid can cause a fall in blood-pressure, and at the same time a slowing of the heart-rate. One possibility is that nicotinic acid causes a vagal stimulation. This view however implies that production of acetylcholine follows the administration of nicotinic acid, because the vagus produces its effect on the heart by liberating free acetylcholine at its endings. Comparison of nicotinic acid and acetylcholine, by measuring their effect on the frog's heart and rectus abdominis, shows that nicotinic acid has scarcely any effect, and a physiological relationship between the two substances appears unlikely. A second possibility is that nicotinic acid causes a rise of pressure in the cerebral arteries and an increased blood-supply to the brain. Furtado[1] quotes C. D. Aring, who found that nicotinic acid produced an increase in cerebral circulation, accompanied by intense cerebral congestion. This rise of pressure could bring about inverse changes in the arteries of the rest of the body, and, accompanied by reflex cardiac inhibition, would account for the fall in blood-pressure and the slowing of the heart-rate.

SUMMARY

A series of 6 cases of angina of effort have been treated by intravenous infusions of nicotinic acid. Subjective and objective evidence of continued improvement followed and this has been maintained during the last six months. The action of nicotinic acid on blood-pressure and heart-rate was constant in almost every case, both being reduced.

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[1] Furtado, D. *Lancet*, 1942, i, 602.

DIAGNOSIS OF COMA IN CEREBROSPINAL FEVER WITH DIABETES

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WHEN two diseases, each a cause of coma and each urgently needing specific treatment, simultaneously affect the same patient, accurate diagnosis of both is of extreme practical importance. In a series of 20 cases of meningococcal meningitis treated during the last fifteen months at Addenbrooke's Hospital 4 showed signs of diabetes on admission, 3 of these were comatose and 1 precomatose. These are recorded to emphasise the fact that the two conditions may occur together and to illustrate the difficulties and importance of making the double diagnosis at once.

CASE-HISTORIES

CASE 1.—A woman of 19, admitted comatose on Feb. 23, 1941, with a diagnosis of meningococcal meningitis. The doctor who sent her in did not know she had been treated for diabetes and this was discovered on admission. She had *had it since the age of 11, had been taking 30 units of insulin* daily and had had six attacks of diabetic coma. On admission she was comatose and dehydrated with sighing respiration, a smell of acetone in the breath, peripheral circulatory weakness, reduced tension of eyeballs, dry furred tongue, head retraction, Kernig's sign, sluggish reflexes, and blood-pressure 100/75 mm Hg. Temperature 97° F, pulse rate 130, respirations 24. Urine specific gravity 1040, orange reduction with Benedict's test, Gerhardt's and Rothera's tests strongly positive. Blood sugar 0·44%, 0·62% five hours later. Cerebrospinal fluid purulent, meningococci present in large numbers. Insulin, 280 units, given in twenty-four hours (220 units in first twelve). Rectal and intravenous drip saline with glucose. Subsequently insulin 30–60 units daily. Sulphapyridine, 7 g in first twenty-four hours, total, 51 g in ten days. She recovered from coma on third day after admission. Recovery uneventful. Discharged on March 19, 1942, on carbohydrate, 200 g daily, and insulin, 30 units twice daily.

CASE 2.—A woman of 50, admitted comatose on Feb. 25, 1942. She had suffered from diabetes mellitus for 11 years and had been taking protamine zinc insulin, 12 units every morning. On Feb. 23 she retired to bed with pains in her legs and on the day of admission was found unconscious though very restless. No insulin was given. On admission she was comatose and restless with sighing respiration. No dehydration, no smell of acetone in breath, no head retraction or Kernig's sign. Tongue moist, good circulation, blood-pressure 160/110 mm Hg. Deep reflexes present and equal. Plantar responses extensor. Temperature 102° F on admission falling to normal, pulse rate 100, respirations 24. Urine specific gravity 1040, Benedict's test, orange reduction, Gerhardt's and Rothera's tests strongly positive. Blood sugar 0·37%. A tentative diagnosis of cerebral thrombosis and diabetes mellitus was made, unfortunately lumbar puncture was not done until twenty-four hours after admission, when purulent CSF was found, with meningococci in pure culture. Insulin, 100 units, was given in the first twelve hours, with rectal salines and glucose and some fluids and glucose by the mouth. On this the blood sugar fell to 0·17% and the ketone bodies in the urine disappeared although sugar persisted. The coma and general condition did not improve. Twenty four hours after admission treatment by sulphapyridine was begun and 12 g was given daily for the next forty-eight hours, mainly intramuscularly. The patient's condition did not improve and she died on Feb. 28.

CASE 3.—A woman of 40, admitted in a drowsy state on March 13 with a two days' history of occipital headache, dimness of vision, pains in the back and retching. She had had a sore throat, cold and cough for five days. On admission she was very drowsy but could be roused with difficulty to answer questions. Stiffness of neck, Kernig's sign and occipital headache present. Blood-pressure 140/95 mm Hg. Temperature 100° F, pulse rate 120, respirations 20. Urine sp. gr. 1030, Benedict's test, yellow reduction, Gerhardt's and Rothera's tests strongly positive. Blood sugar 0·14%. CSF purulent with meningococci in large numbers. March 15, sugar tolerance curve: resting 0·14% (50 g glucose given), 0·21, 0·24, 0·22, 0·16, 0·15. Glucose, 2 g, passed in specimens one and three hours after glucose. Sulphapyridine, 12 g, was given in first twenty four hours, 52 g in eight days The glycosuria persisted intermittently for four days and then ceased May 7, sugar-tolerance curve fasting blood sugar 0 07%, 0 18, 0 16, 0 06, 0 06, 0 06 No glycosuria Discharged well on April 10

CASE 4—A woman of 26, admitted in coma on March 5, 1942, with a seven days' history of sore throat, pains in the back and aching legs, and a severe headache with nausea for twenty four hours On the morning of the day of admission she was found unconscious in bed She was comatose on admission, with slight cyanosis, cold extremities, shallow breathing and smell of acetone in breath, Left plantar response extensor Blood pressure 120/75 mm Hg Temperature 102° F, pulse rate 160, respirations 20 Urine. Sp gr. 1026, Benedict's test, yellow reduction, Gerhardt's and Rothera's tests strongly positive Blood sugar 0 26% CSF purulent, with meningococci in small numbers and a scanty growth of meningococci Insulin, 30 units, in first twelve hours followed by 10 units twice daily for the next nine days Intravenous glucose saline drip Sulphapyridine, 18 g intramuscularly in first thirty six hours, total, 52 g in ten days Nasal feeds and daily lumbar puncture while comatose Partial consciousness returned on March 7 and she became fully conscious on March 9 On March 12 she developed a left facial weakness which had almost cleared up on discharge Intermittent glycosuria persisted until March 9 March 20, sugar tolerance curve fasting blood sugar, 0 08%, 0 11, 0 14, 0 13, 0 12 No glycosuria Discharged well on April 4

DISCUSSION

Ward and Driver[1] describe a case of meningococcal meningitis starting as diabetic coma in a man of 19 Their patient was admitted comatose with flaccidity of all four limbs, a smell of acetone in the breath, glycosuria (3%) and ketonuria The blood-sugar on admission was not recorded After 110 units of insulin and 75 g of glucose in five hours he recovered consciousness, signs of meningitis then appeared and were confirmed by lumbar puncture Treatment with sulphapyridine was then begun and recovery was uneventful They suggest two possible explanations of the cause of the hyperglycæmia, pressure on the floor of the fourth ventricle causing the liver to yield up its glycogen, as in the animal experiment by Claude Bernard, or reduction of insulin output owing to the effect of toxæmia on the islet tissue They favour the first view, and in support of it cite the fact that in this case there was a left facial paralysis, probably due to involvement of the nucleus of the seventh nerve. Twenty-four days after the onset there was no evidence of diabetes as shown by a normal urine and sugar-tolerance curve Hunter[2] records another similar case of meningococcal meningitis in a child of 4 years in whom the combination of coma, ketonuria and glycosuria at onset led to the provisional diagnosis of diabetic coma. Here the glycosuria cleared up after sugar and 15 units of insulin, and the sugar-tolerance curve was subsequently found to be normal

Of the 4 patients reported here, case 1 is an example of diabetic coma precipitated by meningococcal meningitis in a known diabetic Here the clinical signs of diabetic coma were typical There was well-marked dehydration, peripheral circulatory failure, low blood-pressure, a smell of acetone in the breath, pronounced ketonuria and glycosuria and a high blood-sugar There were also unmistakable signs of meningitis The immediate treatment of both conditions was urgent, it was given and the patient recovered Case 2 is an example of meningitic coma in a known diabetic There was a long history of diabetes but the clinical picture was not at all typical of diabetic coma for there was no dehydration, the peripheral circulation was good, the blood-pressure high and there was no acetone in the breath There was also no evidence of meningitis except coma. Here the diabetic factor in the coma, which was probably small, was treated at once but there was delay in treating the meningitis and the patient died Cases 3 and 4 are examples of a transient diabetic condition secondary to cerebrospinal meningitis similar to those described by Ward and Hunter and like theirs clearing up completely as the meningitis was cured In such cases it is important not to overtreat the diabetes or overlook the meningitis. In case 3 the symptoms and signs of meningitis were so definite that diagnosis was clear and the diabetic symptoms were slight and did not need treatment In case 4 diagnosis was much more difficult The complete absence of signs of meningitis, poor peripheral circulation, altered breathing and smell of acetone in the breath, with glycosuria, positive Gerhardt's test and blood sugar of 0 26% were all suggestive of diabetic coma, though 0 26% was very low for such severe coma Against this diagnosis was the comparative absence of dehydration, the relatively high blood-pressure of 120/75 mm Hg, and the rapid response of the ketonuria, glycosuria and blood-sugar to glucose, fluids and a small dose of insulin. In this case it is clear that the main cause of coma was meningitis but the ketosis was probably an additional cause and its control by small doses of insulin may have helped towards recovery Here also as in Ward's case there was a left facial palsy

Meningococcal meningitis complicating true diabetes is probably rare, while a transient glycosuria and ketonuria in the early stages of meningococcal meningitis is not uncommon In all such cases the relative importance of the diabetic and meningitic factors must be accurately assessed since the right treatment depends on this Diagnosis is often made more difficult by the fact that patients in coma can give no history and there may be none available, this confirms the necessity for a diabetic always to carry a card stating the diagnosis and insulin dosage. Mistakes will be avoided if the association of the two conditions is remembered, if the clinical features of the coma are carefully considered, and if a lumbar puncture and blood-sugar are done at once

SUMMARY

The association of meningococcal meningitis, diabetes and coma is illustrated by four cases · (1) diabetic coma in meningitis, (2) meningitic coma in diabetes, (3) two cases of meningitis with transient diabetes, one comatose and the other precomatose

I wish to thank Dr C H Whittle for the pathological and Dr N R Lawrie for the biochemical investigations of these patients

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IMMUNISATION WITH T A B IN AN OUTBREAK OF PARATYPHOID FEVER

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AN outbreak of paratyphoid fever presenting some interesting features occurred in Netherne Hospital in June, 1940 The epidemic was limited to one villa containing 80 patients, a mixture of mental defectives and cases of secondary dementia, 55 were from time to time incontinent and unclean in their habits

The villa is self-contained and staffed by 8 nurses who sleep on the premises Food is not prepared there but is supplied from the main kitchen and is identical with that served to patients in the rest of the hospital on arrival at the villa it is heated and served out in the kitchen The milk and water supplies are identical with those to the main building Two airing gardens are used, one of which had a fairly large patch of grass This has since been replaced by asphalt as it was thought that an incontinent carrier might have fouled the grass and thus infected a garbage eater

The first case developed on June 7 An idiot, who was known to eat any rubbish available, became ill with diarrhœa, vomiting and pyrexia She was nursed in a side room but was not strictly isolated Next day a second patient was found to be ill, but since she showed no gastro-intestinal symptoms the nature of the illness was still unsuspected On June 12, however, 5 other patients developed diarrhœa, vomiting and a rise in temperature Strict isolation was then practised, but during the following six days 12 further cases developed, the last on June 27

The ages of the patients ranged from 3 to 60 years, but most of them were in their teens ourse of the lness was variable In some cases the temperature ettled in two or three days and the vomiting and iarrhœa were mild, in others the temperature remained ationary at about 102° F for two to three weeks, astro-intestinal symptoms were acute and the general ondition poor The spleen was palpable in 3 cases, and a fourth reached half way down to the umbilicus rops of rose spots were found on the chest and abdomen about a third of the patients, 2 cases developed neumonia Out of a total of 19 cases 4 died, all 4 ere idiots and 2 were so difficult to manage that they ere on a chloral and bromide mixture at the time ll the patients in the villa were kept under observation, nd morning and evening temperatures were taken On une 26 all except those with clinical signs were given 2 c cm of TAB vaccine (PDCo), and this was ollowed by 0 5 c cm and 1 c cm at weekly intervals After the first dose of vaccine, one patient developed a mild pyrexia which lasted for a few days, and she has herefore been classified as a case, but otherwise no urther cases occurred

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[1] Ward, C W and Driver, A A *Lancet*, 1940, ii, 228

[2]. Hunter, R R. *Ibid*, 1940, ii, 604

Before June 30 the fæces and urine had been examined nly in patients showing clinical evidence of disease, but from then onwards weekly routine examinations were made on all the occupants of the villa At the first survey 23 patients were found to be excreting *Bacterium paratyphosum B* in the fæces without showing any symptoms, and they were regarded as subclinical cases and isolated In these patients it was impossible to determine the date when infection had begun, and the period over which they carried had therefore to be calculated from the time when the first examination was made Cultures from the fæces showed that of the 15 clinical cases which survived 10 were free from *Bact paratyphosum B* within six weeks, 2 patients carried the organism for nine to ten weeks, one for at least thirty-six weeks, and 2 others are still carrying after an interval of more than 2 years

Among the 23 subclinical cases, 14 were free from *Bact paratyphosum B* within two weeks of the first examination, 4 within four weeks and 3 within eight weeks One patient is still carrying and another patient, after remaining negative for fourteen months, suddenly became positive and has remained so

The source of the epidemic has not been determined Routine examination of the milk and water supplies was carried out and the excreta of the entire kitchen staff were examined, with negative results Since the epidemic was strictly limited to the one villa it was considered most likely that one of the recent admissions to this block was an undiagnosed carrier Only 4 patients had been admitted within the preceding six months Of these, 2 developed symptoms of enteric infection and the infecting organism was isolated from the stools In both the fæces became negative within a fortnight and have remained so during all subsequent examinations A third patient was found on one occasion to be carrying *Bact paratyphosum B* in the stools, but also became permanently negative within a few days The fourth patient has never shown evidence of the disease nor have cultures of the fæces or urine ever yielded *Bact paratyphosum B* It therefore seems unlikely that any one of these 4 was instrumental in originating the outbreak under consideration

One other possibility relates to a patient who was admitted into the villa a year before the epidemic She was transferred from the main block of the hospital, and it was known that enteric infection had occurred there more than once some years previously When the fæces of contacts were first examined she was found to be carrying *Bact paratyphosum B* and has been carrying continuously ever since in spite of drastic treatment She may have been a chronic and undetected carrier when transferred from the main block, but if so it is difficult to explain the interval of a year which elapsed before symptoms broke out among her fellow patients

BACTERIOLOGICAL TECHNIQUE

Throughout this investigation all specimens of fæces and urine were sent to the laboratory on the day they were taken Once the nature of the epidemic had been established, the routine method of examination used was as follows

A thick suspension of the fæces was made in peptone water and was plated directly on to MacConkey's medium A drop of this suspension was also added to a tube of sodium tetrathionate broth, and to each of 7 tubes of peptone water containing brilliant green in dilutions of 1 in 70,000 up to 1 in 1,000,000 Next day the MacConkey plates were examined for the presence of non lactose fermenters and these were identified in the usual way The brilliant green and tetrathionate cultures were plated out on MacConkey's medium and examined after twenty-four hours' incubation Urines were spun down and the deposit plated directly on to MacConkey's medium

Our results were similar to those obtained by other workers and require little elaboration Of the first 82 positive fæces examined only 34 yielded the organism on direct plating In the remaining 48 cases, the organism was isolated from both the brilliant green cultures and the tetrathionate broth in 24 instances, from brilliant green cultures only in 14, and from the tetrathionate broth alone in 10 There is thus a strong case for the use of all three methods in routine examination

Examination of urines yielded consistently negative results, but the difficulty of obtaining catheter specimens from these patients made it impossible to carry out an extended series of investigations The antibody response was not determined since vaccine was given to all the occupants of the villa early in the outbreak

DISCUSSION

The proportion of those exposed to infection who either developed the disease or became temporary carriers is surprisingly high At the first survey, 42 patients out of 80 were found to be carrying *Bact paratyphosum B* in their stools, 19 of those were typical cases, the other 23 gave no clinical evidence of the disease This figure may well have been higher since routine examination of the stools was not begun till about three weeks after the first case had occurred The closed nature of the community and peculiar facilities for the spread of infection afford an obvious explanation of the high proportion obtained

The ratio of transitory carriers without signs to typical cases of the disease is higher than would have been expected Klinger (1909), however, found that of 211 transitory carriers only 92 gave a history of previous enteric infection The remaining 119 had never to their knowledge had the disease It seems possible, therefore, that during an epidemic the number of subclinical cases who carry the infecting organism may exceed those developing symptoms Most of the 23 cases we detected may belong to this category On the other hand, it is known that enteric organisms may be isolated from the stools during the incubation period and that this period may be as long as 38–40 days (Miner 1922) It is reasonable therefore to consider that some of the 23 carriers were potential cases

There is a tendency for epidemics to limit themselves spontaneously. Most cases occur in the first few weeks after the appearance of the primary case, and there is then a gradual decline The epidemic under consideration, however, ceased abruptly less than three weeks after the development of the first case, and this in a community which must continuously have been open to reinfection Did mass immunisation in some way limit the spread of infection and the development of the disease? Vaccine was given to all the patients without clinical signs, including the 23 carrying *Bact paratyphosum B* in the stools No fresh cases developed, and of the contacts known to be carrying the infecting organism only one developed a mild pyrexia suggestive of an abortive attack

It is an accepted fact that development of immunity, as indicated by the appearance of antibodies in the serum, does not begin for about five to six days after the first immunising dose, and is probably not appreciable for another seven to ten days, thus it seems scarcely credible that the sudden cessation of the epidemic can have been due to the inoculation It is worth while comparing our experience with that of Ramsey (1935) who carried out similar inoculation of household contacts and compared the incidence of cases among this group with that in an uninoculated group He found that the observed number of cases developing among contacts who had received 3 doses of vaccine was only a quarter of the expected number, and that even in contacts who were still in the process of being immunised the reduction amounted to a half He does not draw any conclusion from this latter result, on the grounds that the numbers concerned and the differences obtained are too small to be statistically significant Our results also refer to small numbers and we have no control group with which to compare them, so that we also do not feel justified in drawing definite conclusions Taken in conjunction with Ramsey's figures, however, it seems that even after the first dose of TAB there is a tendency towards a diminution rather than an increase in the incidence Moreover, no ill effects analogous to provocation typhoid were produced by the immunisation Even among the 23 contacts found to be carrying paratyphoid bacilli in the stools a few days after the first dose of TAB, only one developed the disease and that in a mild form

Comparison of the incidence of carriers among uninoculated patients and inoculated subclinical cases shows that 3 of the 19 patients who were not inoculated, and 2 of the 23 contacts who received vaccine are still excreting *Bact paratyphosum B* It is therefore clear that while immunisation did not increase the incidence of the carrier condition, it certainly did not prevent it

SUMMARY

An outbreak of paratyphoid fever in a closed community of 80 persons with exceptional opportunities for cross-infection is described

All the contacts were immunised with TAB vaccine and this was followed by routine examination of fæces over several weeks

The number of contacts who excreted *Bact paratyphosum B* in the fæces without developing symptoms exceeded the number of clinical cases and formed a potential reservoir for the spread of infection

Immunisation of patients after exposure to infection appeared to have no harmful effects and may possibly have been a factor in the abrupt termination of the outbreak

The carrier-rate was not appreciably influenced by immunisation

We should like to thank Lord Stamp for his assistance with this work and the nursing staff for their help in collecting the specimens

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BILATERAL CONGENITAL SUBLUXATION OF THE ACROMIOCLAVICULAR JOINT

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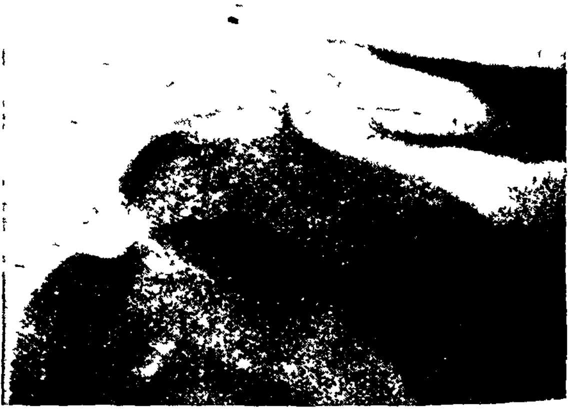
CONGENITAL dislocations and subluxations in the region of the shoulder are not common, in fact only one example of congenital dislocation of the acromioclavicular joint appears to have been recorded, and Smith,[1] who reported it in 1870, was unable to find any genuine examples published before that date The following two cases of bilateral congenital subluxation of the acromioclavicular joint were seen at recent air-crew medical examinations

CASE-HISTORIES

CASE 1 —A man of 20 He had been a full-time breast fed baby weighing 8 lb at birth The confinement was uneventful and the presentation vertex He gave no history of serious illness or injury and said he had known for several years that his shoulders were more prominent than those of his fellows, and that he had felt self conscious about them when bathing and swimming He volunteered the information that his father was exactly the same and that he likewise had suffered no injury to his shoulders, unfortunately owing to war conditions it has been impossible to examine the father His mother, brother and two sisters were fit and had no similar deformity No abnormalities were known in preceding generations or in collaterals He was of medium build and average muscular development Casual inspection showed that some abnormal condition was present at the outer end of both clavicles The outer end of each clavicle was 1 5 cm above the acromion and overriding it by 0 5 cm The capsule of the joint was lax and the clavicle could easily be moved in an anteroposterior direction, but less easily laterally Reduction was almost complete but unstable Movement at the shoulder was full and free both with a fixed and mobile scapula It was not practicable to take a radiogram

CASE 2 —A man of 18 He had been a full time normal baby whose delivery was uneventful He had sustained no injuries and said the ends of his collarbones had been prominent for as long as he could remember Apart from an abscess in the region of his left elbow at the age of 6 years he had had no illness of note His father, mother and two sisters were alive and well and no deformities were known in his family or in the collaterals He was well built and of more than average height The lateral ends of both clavicles were much more prominent than usual and were raised 1 cm above the acromion, overriding it by 0 5 cm Reduction was easy but unstable Movements were full and he experienced no disability The left fifth metatarsal was shortened and the small toe poorly developed In all other respects he was apparently normal The bilateral subluxation was confirmed radiographically (see figure)



Radiogram in Case 2

DISCUSSION

The example of congenital dislocation of the acromioclavicular joint reported by Smith was in a macerated specimen of unknown origin in which the outer end of the clavicle was poorly developed, and in which the articular surface of the acromion was missing The evidence for its congenital nature was circumstantial In the cases here reported the evidence is again circumstantial but satisfactory Even after repeated questioning of the first candidate, and in information supplied by his father in a carefully worded questionnaire, no history of antecedent trauma was obtained It is most unlikely that any one could acquire a bilateral subluxation of the acromioclavicular joint without being aware of injury Indeed, with the probability that the father has a similar condition (again without history of trauma) one might go even further and consider the possibility of heredity The second candidate was equally emphatic that he had had no injury

On several occasions, less definite examples of bilateral subluxation have been seen In these the displacement was not more than 0 5 cm, but in each case there was definite evidence of laxness of the capsule of the joint It seems therefore that some degree of laxity of the capsule is not so very rare, and may predispose to poor results in subsequent acquired dislocation or subluxation

Experience has shown that in acquired subluxations and dislocations reduction is not essential for the full return of function, but the first patient showed that psychological ill effects of non-reduction are possible thus he feels that he is not as other men and wonders how important this may be It seems that, in treating subluxation and dislocation of the acromioclavicular joint, the cosmetic result is at least as important as the functional

I wish to thank Dr F H Kemp of the Radcliffe Infirmary, Oxford, for taking radiograms of the second candidate and the librarian of the Royal Society of Medicine for his help in trying to trace further examples

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[1] Smith, R W *Dublin quart J med Sci* 1870, 50, 474

CORROSIVE PYLORIC STENOSIS WITHOUT ŒSOPHAGEAL INVOLVEMENT

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WE had the opportunity recently of studying a patient with pyloric stenosis due to corrosion as a result of drinking acid The peculiar feature of the case was that there was no involvement of the œsophagus The article by C A R Schulenberg in the *Lancet* of Sept 27, 1941 p 367), brought the rarity of this condition to our notice. Our patient showed much the same features as the one he described—no involvement of the mouth, throat, or œsophagus either of an acute or chronic nature, and the rapid onset of the stenosis

A man of 36 had always been nervous, shy, and backward in company Since 14 years of age he had been subject to depressive attacks During these attacks he has had amnesic periods In one attack, 4 weeks before admission to this hospital, he attempted suicide by drinking acid out of a battery The only thing he could remember was that he had been violently sick afterwards Ever since then he has had increasing thirst and inability to keep food down On admission here he had the typical symptoms of pyloric stenosis once a day he vomited large quantities of fluid He was somewhat dehydrated The X-ray report was "Œsophagus no evidence of constriction, no delay in passage of bolus of barium cream to stomach Stomach very atonic, attempt at peristalsis After manipulation in supine position a thin stream of barium passed into the duodenum Summary extreme narrowing of the prepyloric area of the stomach with somewhat enlarged and atonic stomach"

After a few days on rectal salines and stomach lavage a posterior gastro-enterostomy was performed by Mr A M Clark Gross thickening of the pyloric region was found, the rest of the stomach appearing normal He made an uneventful recovery

Though the acid swallowed was probably not very weak—the acid in a battery is usually 28% H_2SO_4—it cannot have been long enough in contact with the rest of the alimentary canal to cause injury, but at the pylorus it was held up by spasm and was in contact with the mucosa long enough to cause serious corrosion

We wish to thank Dr W J Richard and Mr A M Clark for permission to publish this case

SPERM SURVIVAL IN RUBBER SHEATHS

JOHN TYNEN, R M RANSON

NOW that the collection in rubber sheaths of the seminal fluid of man and animals is becoming increasingly common, both for pathological investigation and for artificial insemination, the question of sperm survival in rubber sheaths is important The object of this note is to emphasise the fact that the majority of sheaths now obtainable are toxic to human sperms, as measured by the time of survival of the sperms under standard conditions of storage Owing to the war further supplies of the least toxic sheaths previously examined by one of us (R M R *Lancet*, 1937, i, 1400) are no longer available in this country, for they were of Continental manufacture

Experiments have been undertaken with a view to extracting the toxic substance from the sheaths now obtainable Since it seemed obvious, from the rapidity with which sperms were killed by the more toxic sheaths, that the toxic substance was readily soluble in semen, initial attempts to extract this were made with isotonic solutions containing gelatin and egg-white, and having a pH value approximating to that of human semen These solvents were found to be only very slightly superior to hot soap solutions as detoxicants Various other solvents, such as ether, chloroform, &c were tried with indifferent success However, it was found that by soaking the sheaths in hot alkaline solutions of industrial spirit, the toxic action could be greatly reduced

Samples of 17 popular brands of sheath were examined for toxicity both before and after washing with hot soap solutions or alternatively with hot industrial spirit containing ammonia. The mean survival-times of fresh human sperms maintained at 37° C in the unwashed, soap-washed, and spirit-washed sheaths were 50, 86, and 140 minutes When the sperms were stored for 15 minutes in the sheaths and then transferred to glass vessels the mean survival-times were 90, 160, and more than 360 minutes Occasionally, sperms which had been stored for 15 minutes in a spirit-washed sheath and then transferred to a glass tube were found to be still feebly active at the end of 24 hours

If, therefore, it is essential for pathological or clinical purposes to employ a sheath of minimal toxicity to sperms, it should be immersed for about 10 minutes in a mixture of about 200 c cm of industrial spirit and 10 c cm of dilute ammonia solution (*BP*) at about 50° C The sheath should be turned inside out at least once during the treatment, at the end of which it should be rinsed with tap water, dried, and freely dusted with talc The use of starch for dusting is inadvisable owing to the close similarity of the microscopical appearance of the granules to that of concretions occasionally appearing in semen, whence identification of the latter is complicated The patient should be told to transfer the semen from the sheath to a glass tube as soon as possible

It seems likely that the "fillers" and "accelerators" used in the manufacture of rubber sheaths are the source of the toxic action Experiments with saturated saline solutions of mercaptobenzthiazole revealed the high spermicidal power of this substance, which is an example of the type of substance commonly employed in rubber vulcanising processes

The chemical and biological work has been carried out in the Research Laboratories of the British Drug Houses Ltd, to the directors of which we are indebted for permission to publish this memorandum

PERIPHERAL NERVE PALSIES FOLLOWING INTRAMUSCULAR INJECTIONS OF SULPHONAMIDES

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PHYSICIAN IN CHARGE, NEUROLOGICAL DEPARTMENT,
ST THOMAS S HOSPITAL

THE object of this communication is to draw attention to the serious damage which may result from the intramuscular injection of sulphonamides in the close neighbourhood of peripheral nerves Three such cases have come under my observation

CASE 1—A healthy young man contracted meningococcal meningitis and was removed to hospital The attack was typical and of moderate severity and he received a full course of sulphapyridine, partly administered by intramuscular injection of the diluted sodium salt into alternate buttocks In all 7 injections were given Seven days later it was observed that he was unable to move his right foot, which together with the lower part of the leg was numb He has no recollection of the first five days after admission to hospital He was discharged from hospital 8 weeks after admission When examined a fortnight later he showed signs of complete loss of function of his right sciatic nerve There was moderate wasting and complete loss of voluntary power in the lower part of the biceps femoris and of all muscles below the knee The ankle jerk was lost and there was complete sensory loss in the distribution of the sciatic nerve in the foot and leg The skin of the foot was dry and atrophic At about the level of the junction of the middle and upper thirds of the thigh (5 in below the great trochanter), a little lateral to the line of the sciatic nerve, one could feel an ovoid mass about 1½ in long and 1 in wide Pressure on this produced neither local discomfort nor referred sensations in the foot There has been no recovery in six months

CASE 2—A previously healthy man was admitted to a hospital on account of an infected blister on the right heel He was critically ill and in addition to local treatment to the foot an intramuscular injection of sodium sulphapyridine was given into the outer aspect of the right arm Two days later it was observed that he had right wrist drop. When examined 6 weeks later he had signs of a complete radial nerve palsy Apart from all three heads of the triceps, all muscles supplied by the radial nerve were wasted and completely without voluntary power There was slight impairment of sensation along the radial border of the forearm and hand. No recovery has occurred in six months

CASE 3—A previously healthy man was wounded in the left arm by a bomb splinter. On reaching this country 2 days later an immediate operation was performed on his arm, which had become heavily infected. As far as can be ascertained from his records, he received injections of sodium sulphapyridine and he says that at least one injection was given into the left buttock The day after the operation on his arm the left leg was found to be powerless below the knee, having been normal in all respects before Nine months later the signs indicated a severe partial lesion of the left sciatic nerve There was complete loss of power with severe wasting in all the muscles of the anterior and lateral compartments of the left leg, with weakness of the flexors of the ankle and toes Sensation was severely impaired on the dorsum of the left foot and the outer aspect of the lower third of the leg, but there was no area of complete loss Electrical examination showed complete reaction of degeneration in the anterior tibial muscles This patient's progress has been followed and the signs have not changed in 15 months

In cases 1 and 2 the physiological interruption of the nerve was complete and in case 3 very severe In no case has any evidence of recovery shown itself at present In cases 1 and 2 the damage can be attributed with almost complete certainty to the drug, which in these cases was sodium sulphapyridine In the third case *it is* not possible to be quite so certain, as the hurried notes made at the time indicate that in addition to sulphapyridine sera were also administered by injection

The practical conclusions to be drawn appear to be (1) that sulphonamides should only be administered by intramuscular injection when the oral route is impracticable, (2) that they should then be administered only by a medical man, (3) that they should be given into muscles as remote as possible from an important peripheral nerve—e g , into the vastus externus, and (4) that the most rigid asepsis should be insisted on, the instruments being boiled rather than sterilised by chemical agents

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THIS book, published after its author's death, is a record of her unique experience and remarkable clinical judgment , it is besides a standard textbook on cancer of the uterus based on fourteen years' work in a clinic which has produced some of the best results ever obtained in the treatment of this form of cancer A table showing local cures in relation to grade and stage of the disease suggests that the histological grade is of little significance —a point which Dr Hurdon emphasised Clinical observation has shown that the stage of the disease is all-important, and that delay in treatment is a serious mistake In a chapter on general clinical techniques she passes on information obtained by careful observation over many years A special chapter deals with dosage calculation and distribution Prof W V Mayneord, working with her, measured the radiation obtained from the intracavity applicators used at the Marie Curie Hospital Dr Hurdon found it desirable to pack the applicators well up into the lateral fornices , satisfactory dosage depends on getting the radium in good position It is unfortunate that there was not time for another study of the dosage in more advanced cases where ideal arrangement is impossible but where nevertheless some remarkable five-year cures were recorded Remaining chapters cover treatment of complications, results of treatment, and other malignant conditions including sarcoma of the uterus, cancer of the vagina, and cancer of the vulva The section on results is impressive , the five-year survival-rate of 36% of all cases treated sets a standard for other radiotherapists

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SINCE Claud Worth classified the degrees of binocular vision, from simultaneous macular perception to full stereoscopic vision, increasing attention has been paid to the ocular muscles and their relation to eyestrain As Miss Dobson points out, experience has shown that of all causes of eyestrain that lie with the external ocular muscles, the commonest is convergence weakness Whether man was intended to spend 8 hours a day at close work is a matter for argument, but there is no doubt that doing so calls for a sustained muscular effort which at times taxes him severely Miss Dobson gives an account of the causes of eyestrain other than those due to errors of refraction, and there is much useful information in her book Eye exercises have become the vogue and are expected to cure anything from myopia to cataract This book gives a restrained account of the help that may be gained from them The intimate association between convergence and accommodation is well explained and there are some useful hints for those prescribing glasses for presbyopia Not many oculists will agree that all manifest hypermetropia must necessarily be corrected for distant wear, Miss Dobson has had her defeats over it, seemingly, for she says, " it is frequently difficult to assure patients that this is necessary as slightly blurred vision is so well tolerated " The information conveyed in this book is not always easy to extract and a more concise definition of some of the terms used would have made for easier reading

THE LANCET

LONDON SATURDAY, OCTOBER 10, 1942

RICKETS IN THE BREAST-FED BABY

A MOTHER in the *Nursery World* for Sept. 10 is worried because her baby at the age of 18 months has been admitted to hospital for the treatment of rickets, despite the fact that she suckled him for 9 months and later included halibut oil in his diet. Is it something lacking in war-time diet? she asks, and goes on to suggest that hers is a common problem. If so, practitioners will be asked about prophylaxis. This mother says her son's legs were bandy as soon as he began to walk, but a certain amount of bandiness is a normal phenomenon, and in chubby babies the muscle bellies of the legs give an erroneous idea of the shape of the bones. Careful X-ray examination with soft rays will reveal in many instances perfectly straight bones, although the soft parts look unnaturally curved.[1] So radiological diagnosis is essential to establish the presence of rickets, and orthopædic surgeons are perhaps too ready to ascribe bow legs and knock knees to rickets. The next point concerns breast milk and its vitamin-D content. This must depend largely on the mother's diet and state of health, and breast-feeding by no means excludes the risks of rickets. Indeed, experience in places where rickets was rife indicated that when rickets does arise in the breast-fed it is likely to be severe. But rickets does not seem to have become unduly prevalent since the war began, and in this particular case the mother lived in the country and her diet was said to be generous, containing milk, eggs and vegetables. The mother does not mention her vitaminised margarine, a most valuable source of vitamin D for her and indirectly for the baby (60 IU per oz.), but even with this the findings in Australia mentioned in these columns[2] a few weeks ago suggest that the expectant mother in good hygienic and dietetic circumstances needs extra vitamin D as well as extra calcium if her baby is to be fortified against rickets. The third point is that rickets is a disease of growing bones, and the more rapid the growth the greater the chance of rickets. Thus arises the paradox of the breast-fed baby who is doing exceptionally well on his diet and growing so fast that even a normal ration of vitamin D is not enough for him. In other words, the total amount of vitamin D available in his mother's milk daily is, in relation to his size and growth, relatively deficient. It is just this over-fed, contented fat baby who not only looks bandy when he gets on his legs but because of his rapid growth and over-weight condition may actually develop some bending of his relatively poorly calcified bones. If he had not done so well on the breast he might not have been bandy.[1] *Large* doses of cod-liver oil, at and after the time of weaning, may make matters worse by encouraging too rapid growth. The remedy is twofold. First, see that expectant mothers take vitamin D in adequate amounts and really drink their pint of milk daily during the last three months of pregnancy and that they do not give them up while they are suckling the baby. Secondly see that every breast-fed baby gets some cod-liver oil, or its equivalent, right through the rickety period—up to 2 years. Start with a few drops daily at a few weeks old and work up steadily to 30–45 minims a day at 6 months, when mixed feeding begins. The increase should continue, aiming at 60–90 minims at a year old. Certain modifications in this programme may be permitted. In summer the baby under 6 months can do with less cod-liver oil but after that age the demands for vitamin D are so great that it is risky to reduce the dose much. The over-weight baby needs special care and whenever possible a vitamin concentrate is better than cod-liver oil for him.

THE AMPUTEE'S POINT OF VIEW

THE unshapely artificial limb that a Syme's amputation necessitates has been advanced, especially in the case of a woman, as an argument in favour of the below-knee amputation.[1] WHEELER,[2] having seen excellent and lasting functional results with the Syme amputation, urges that it is up to the instrument maker to fashion a more shapely limb and considers that the average woman would ignore reasons of show for the sake of the more stable, useful stump. A woman who has had first a Syme and then a below-knee amputation done does not agree. Ten years ago, when at the age of 18 she had a Syme for a badly crushed foot, she was at first appreciative of her surgeon's conservatism, but she soon regretted that her stump did not allow a natural looking foot to be fitted; her thick ankle and limited motion at the joint made it obvious that she had an artificial foot. She could walk all day and dance as much as she liked, but she could not dance properly or wear dancing slippers. In a blitz her leg was burnt badly enough to necessitate re-amputation through its middle, and when her below-knee artificial leg was fitted she was delighted to see herself in the glass standing on two normal and evenly shaped legs. Now people no longer realise that she has an artificial leg; she can walk as well as she did with her Syme and dance better in proper shoes; but above all she is no longer labelled a cripple.

Limb-fitting surgeons have given much consideration to the emotional outlook of amputees, and they have been divided into three groups by an American committee, composed of surgeons and limb manufacturers, who have recently issued an admirable handbook on amputations.[3] First, there are those whose amputation is performed for chronic diseases such as bone infection, vascular insufficiency or malignant disease. These accept their loss as a blessing and a welcome escape, and are content with any form of prosthesis, even though it be unshapely or ungainly. In a second group a planned re-amputation is done to enable a more becoming and useful prosthesis to be fitted. The woman whose opinion has been quoted comes in this category. These are the most gratifying patients of all for the surgeon—they look forward to the operation, plan, and are eager to start life afresh. In the last group are those recently mutilated by accident or warfare. Here the healthy patient must suddenly realise that he will have supplied by the radial nerve were wasted and completely without voluntary power There was slight impairment of sensation along the radial border of the forearm and hand. No recovery has occurred in six months

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[1] There is a good photograph of this in the last edition of Hutchison's lectures on Diseases of Children (page 161).

[2] *Lancet* Aug. 8, 1942, p. 163.

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[2] Wheeler, W. I. de C. *Ibid*, Aug. 29, 1942, p. 265.

[3] Handbook on amputations. By a joint committee of the American Medical Association and the Association of Limb Manufacturers of America. Chicago: American Medical Association. 1942. Pp. 82.

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The problem of the first breath has been at least partially solved. The essential neuromuscular mechanism for this act is already laid down, in the sheep, between the 34th and 50th day of gestation. From this early stage, when the respiratory movement is the result of a reflex arc consisting of the maxillary branch of the trigeminal nerve, cells in the reticulospinal tract, and the spinal accessory and upper cervical ventral nerve-roots, there is a gradual transition as the higher centres develop and inhibit the lower centres. At birth two main factors come into play—partial asphyxia due to suspension of the placental circulation, and multiple stimuli from the skin due to the removal of the fœtus from its non-stimulating environment of amniotic fluid to the external world. These two factors are undoubtedly the major ones, though whether oxygen want or excess of carbon dioxide predominates is still undetermined. Such, in brief, is the story up to date. Some of it was known before; much of it was suspected, but it is only now that proof has been provided. The progress made in such a short period as 5 years justifies the hope that we may at last really understand the physiology of birth, and secure a foundation for the proper handling of the beginnings of life. This is in its nature essential work

WOUNDS AND FLAVINES

THE war has naturally brought a great revival of interest in the local treatment of wounds. The work has been divided into three main parts—the prevention of hospital infection, the application of prophylactics, and the treatment of established infection. Apart from the widespread use of the sulphonamides as local applications, both in prevention and in treatment, interest has been revived in the hypochlorites by BUNYAN,[1] and in the group of acridine dyes exemplified by acriflavine and proflavine. These dyes have had many protagonists and many antagonists. For example, FLEMING,[2] marshals the evidence against acriflavine, pointing out that 80% of the dye is absorbed from a 1 in 1000 solution by dressing gauze, and that it has a powerful inhibitory effect on the bactericidal power of blood at a concentration of 1 in 270,000 if allowed to act on the blood for four hours before the test inoculum of bacteria is added. JACOBY, MEDAWAR and WILLMER[3] found that proflavine was intensely toxic to fibroblasts in tissue culture, causing an irreversible inhibition of mitosis at concentrations of less than 1 part per million, and might thus be expected to interfere seriously with healing. GARROD[4] however expressed the view that the undeserved contempt for antiseptics which is now so common is largely based on beliefs which arose during the last war, when the almost universal judgment on experiences with casualties in France was that antiseptics had failed, and he considers that because of its constancy of composition, minimal toxicity and relative cheapness, proflavine is the antiseptic of choice.

Proflavine is 2:8-diaminoacridine sulphate and it has some promising relatives. In 1934 ALBERT[5] began the synthesis of a series of acridine compounds, and his work led to the discovery of 2:7-diaminoacridine, which is as powerful an antiseptic as proflavine and acriflavine, yet has only a tenth of the toxicity of acriflavine for mice.[6] Unfortunately, 2:7-diaminoacridine is difficult to make in quantity and has not been generally available, but ALBERT[7] is said to have overcome that difficulty. RUSSELL and FALCONER[8] investigated the histological effects of acridine compounds, coal tar derivatives, halogen compounds, organic mercurials and 'Soluseptasine' on rabbit brain. They found that acriflavine, like most other antiseptics, caused hæmorrhage and necrosis, but that proflavine was little more harmful than isotonic saline solution, with 2:7-diaminoacridine hydrochloride not significantly different, so they recommended the use of proflavine sulphate as a 0.1% solution in isotonic saline buffered to pH 6.3. MANIFOLD[7,9] investigated the effect of a similar series of antiseptics on the respiration of brain tissue, and found that acriflavine was highly toxic, even at very low concentrations, while proflavine was much less toxic, and 2:7-diaminoacridine hydrochloride significantly less toxic than to go through life maimed and must re-shape his future accordingly, often there is the suppressed horror of possible disfigurement. Ultimate adjustment will depend partly on the patient's natural emotional stability, partly on the mental atmosphere of his convalescence The busy surgeon may forget that the stump is but part of the whole. The nursing staff display the sympathy which every amputation evokes, but as the American committee point out such sympathy must not be misplaced, and any tendency to molly-coddling must be curbed. It is important at an early stage for the patient to regain the ambition to embark on his new life Stories of what others have thought and achieved under similar circumstances will encourage and stimulate him Six years ago a man who at the age of 34 had reached the forefront of chest surgery pricked his finger in the theatre, infected it later when doing a dressing and had to have an amputation high up through the arm As he woke from the anæsthetic his first words to his wife were, "Now we shall just have to start all over from the beginning again" H P **Nelson** died soon afterwards but his is an outlook on life which many a man will be wise to adopt.

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[1] Bunyan, J. *Brit. med. J.* 1941, ii, 1.
[2] Fleming, A. *Proc. R. Soc. Med.* 1940, 33, 487.
[3] Jacoby, F., Medawar, P. B. and Willmer, E. N. *Brit. med. J.* 1941, ii, 149.
[4] Garrod, L. P. *Lancet*, 1940, i, 798 and 845.
[5] Albert, A. and Linnell, W. H. *J. chem. Soc.* 1936, p. 1614.
[6] Albert, A., Francis, A. E., Garrod, L. P. and Linnell, W. H. *Brit. J. exp. Path.* 1938, 19, 41.
[7] See Manifold, M. C. *Ibid*, 1941, 22, 111.
[8] Russell, D. S. and Falconer, M. A. *Proc. R. Soc. Med.* 1940, 33, 494; *Brit. J. Surg.* 1941, 28, 472.
[9] *Proc. R. Soc. Med.* 1940, 33, 498.

At Roehampton, by teaching and precept, they make the patient realise that he is not to be dependent on others and must not regard himself as a cripple If others are not so to regard him he must both walk normally and look normal, that is why the Roehampton surgeons urge that, although they can fashion a limb to fit any type of stump, amputations must be done at the sites they suggest It is odd that amputees are so often anxious about the look of the lower limb prosthesis, and yet the arm amputee discards it at the first opportunity, prefers to walk about without an apparatus, and rarely attempts to conceal the disfigurement The Roehampton authorities say that the upper limb should be fitted at the earliest possible moment—usually six weeks—or the patient will learn to do without it For the child too they have laid stress on the importance of early fitting, otherwise as he plays with other children he regards himself as different—a cripple Lower limbs for the child are now so made that they can be easily lengthened, and the child will become particularly adept and proficient with an artificial leg or arm, providing it is early accustomed to its use[4] If the stump is not used till adult life it "loses its place" in the brain Early use of the stump is as important for the adult, and progress will only come if the amputee is keen and anxious to get back to a job The patient has to work if he is to learn to balance, to swing, to walk and to look normal **Jean Camus** wrote in the last war · "Physiotherapy cannot be prescribed as quinine is prescribed The malarial patient who takes the latter medicine benefits whether he wishes to or not The wounded man who submits each morning to his mechanotherapeutic treatment does not recover unless he wishes." We can foster that wish, and A. T. **Lyall**, writing in the *Spectator* (Sept 25), points the way Industry must take a hand, he says, and every employer must consider it his duty, not charity, to train and to place the disabled Man succeeds best when he does the work his heart desires most To train the disabled miner to be a cobbler or a basket-worker is to batten down his spirit to succeed The maimed agricultural labourer must be returned, if at all possible, to his first love, the welder to his trade, the clerk to his desk, and those that would be doctors it should be our function to encourage and support during their training The employer will be well rewarded if it is "with savage determination" that the cripple strives to keep apace—even ahead—of his fellow men

MAMMALIAN BIRTH

One of the curious gaps in our knowledge is that concerning the phenomenon of birth The mechanical aspects are the essence of obstetrics, just as the anatomical development of the fœtus is the essence of embryology But the how and wherefore are only now coming to be understood as a result of the pioneer work of **Barcroft** and his colleagues at Cambridge[1] and of **Barclay** and his colleagues at Oxford[2] As a result of the close cooperation of these physiologists and radiologists it has not only been possible for the first time to observe the circulation in the intact foetus by means of X-ray cinematography, but to understand at least some of the processes which come into play during mammalian birth All these observation have been made on the sheep, but their application to man should be comparatively easy

In the sheep, whose period of gestation is 147 days, the placenta reaches its maximum weight at the 100th day, despite the fact that the fœtus is then only one-eighth of its size at full term Although the volume of the fœtal capillary bed in the placenta remains constant during the last third of pregnancy, adequate oxygenation of the fœtus is maintained by its rising arterial pressure from the 100th to the 130th day and by an increase in the hæmoglobin during the last fortnight So far as oxygen supply is concerned, as **Barcroft** neatly puts it, the fœtus at the 80th day is living at the level of Mont Blanc, by the 130th day it has passed the Andean level, at birth it is under Mount Everest conditions The fœtus as it grows to maturity suffers like the mountaineer from an increasing degree of oxygen want, unlike the mountaineer it cannot meet that situation by panting How far it can be said to acclimatise is not known At birth the blood in the placenta is transferred to the fœtus by contraction of the umbilical and placental vessels, and possibly in man by contraction of the uterus, this overloading of the fœtal circulation is not to supply the newly functioning lungs, which are indeed already vascularised, but to provide a store of iron to see the infant organism through the first few months of life when its intake is inadequate The extra corpuscles are soon broken down and their iron is stored in the liver The closure of the umbilical vessels when the cord is ruptured seems to be brought about by their own contractility, particularly at the level of the umbilicus itself

The circulation and the cardiovascular system in the mature fœtus are much the same as at the 100th day, the main difference being a well-marked fall in the relative weight of the liver which declines from 11% of the body-weight at 69 days to less than 3% at 140 days A remarkable feature of the fœtal circulation the trade union organisation, to supervise and improve safety devices, by way of supplementing the work of the factory inspectors, who are nowadays kept very busy The sections of the pamphlet dealing with eye injuries, hours of work, weight lifting and compensation for injuries are all instructive The compensation section could usefully be issued as a leaflet to each worker, for cases still arise in which an injured man gets no compensation because no one has told him how to apply for it The Factories (Medical and Welfare Services) Order is felt to be only a first step towards an efficient medical service, and the pamphlet objects that the doctor appointed is chosen entirely by the management and that there is no Government supervision of the way he does his work The Ministry of Labour, however, has published a memorandum on the duties to be expected of a factory doctor, which we reviewed last week (p 405) The Industrial Welfare Society has lately revised its booklet[2] on health services in industry, unlike the LRD pamphlet it is addressed mainly to employers The society asks how many panel doctors have been inside a factory or know the conditions in which their patients spend much of their lives There are, in fact, probably about 1700 general practitioners acting as factory surgeons, as well as some 500 odd who have lately been appointed as part time medical officers to factories The doctor best fitted to treat the patient is the one who knows his environment both at home and in the factory General practitioners might well be appointed freely as part time officers to one or more smaller factories, and small firms might combine for the purpose

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[4] Langdale Kelham, R. D and Perkins, G Oxford War Manual on Amputations and Artificial Limbs London, 1942

[1] Barcroft J Barron, D H Kennedy, J A, Mason, M F refs in *Lancet*, 1941, ii, 91, 1942, ii, 117

[2] Barclay, A E, Franklin, K J and Prichard, M M L *Brit J Radiol* 1942, 15, 249 See also *Ibid*, 1939, 12, 505

A REGIONAL ADVISORY COUNCIL GETS TO WORK

In theory regionalisation is much favoured by the planners of today In practice it seems to have made a good beginning on Tyneside The North Eastern Regional Hospital Advisory Council, which meets under the chairmanship of Lord Eustace Percy, is self styled a "purely advisory and consultative body," but its first annual report shows that not only has it established the machinery for future discussions, but it has set those responsible for the health services of the region some searching questions, and seems to be in a fair way to getting the answers Indeed, clouds of careful questionnaires are being broadcast For instance, by arrangement with the MRC and the Nuffield trustees, Dr A Q Wells, reader in pathology in the University of Oxford, has spent several weeks in the region and on the basis of his own observations and on questionnaires completed by the local people concerned he has submitted a report on the pathological services to the council Questionnaires on the hospital facilities available have also been set to the local authorities and to the voluntary hospitals, while the accident service subcommittee have yet another questionnaire now ready for circulation on the fracture services of the region Another side of the council's work is shown by the help it was able to arrange for the Durham County Hospital which during the last years has been faced with a growing burden of debt The hospital applied to the council for help and advice and after investigation the council recommended that the Nuffield Trust should make it a grant on condition that a contributory scheme was at once begun The satisfactory result is that the trustees have agreed to give the hospital £5000 over the next three years and the new contributory scheme already has a membership of over 20,000 and an income of about £10,000 The council is an expression of the common responsibility of the local authorities and the voluntary hospitals to provide hospital services for the people, and it seems to have made a flying start in promoting coöperation, preventing duplication and putting its finger on deficiencies

EXPERIMENTAL LIGHT ON CRUSH SYNDROME

The investigation of trauma in man is made difficult not only by circumstances of time, place and enemy action but also by the multiplicity of insults Thus fright, exposure, hæmorrhage, soft tissue damage and fractures often occur together in the one patient, as well sometimes as the rarer type of injuries such as blast The special advantage of animal experiment over clinical observation is that a single factor may be isolated and studied In contrast to many producers of what is loosely known as "experimental shock," Duncan and Blalock[1] in two recent papers have confined themselves to one main factor—soft tissue damage—in an attempt to reproduce in dogs the analogue of crushing injury in man The limb was clamped between wooden boards at a pressure of 500 lb for five hours under 'Pentothal Sodium' anæsthesia, after release, all but one animal died from "shock," due, as in man, to loss of plasma from the blood stream into the injured area This mortality could be greatly reduced by enclosing the limb immediately after release in a rubber cuff inflated to a pressure of 40 mm Hg A similar but slightly smaller reduction in mortality due to shock was produced both by transfusion of plasma and by keeping the limb at a low temperature during crushing It may be noted that only 33 ml of plasma per kg body-weight was given over a total period of two hours In man, more than this is often required, and over a longer time, if death from shock is to be averted In human crush injury the cause of death is usually, therefore, renal failure, and it occurs not on the first but on the sixth or seventh day In those of Blalock's dogs surviving the shock period, fatal renal failure unfortunately did not appear Oliguria, gross hæmaturia and casts were seen, together with some azotæmia Urinary creatine and creatinine but no urea figures are given, hence we can only assume that this azotæmia was due to nitrogen retention Nor is it possible to compare the effects of therapeutic compression with those of plasma transfusion on the blood non-protein figures, as these are not given for the former group Thus the comparative effects of compression and transfusion on the development of renal damage still remain to be evaluated

Since the human condition is superficially similar to that of mismatched transfusion kidney, in which alkalinisation of the urine is thought to be entirely preventive of renal failure,[2] this seems the treatment to be first tried That has not yet been adequately done, the alkali had been given in too small a dose to change the urinary reaction or too late to affect the result, or the case has been so mild that recovery could already have been forecast More experimental work, on the renal aspect particularly, is badly needed Meanwhile Patey and Robertson[3] maintain that the crush syndrome arises from loss of blood constituents into the injured limb, while the isolation of myohæmoglobin from the urine of five of these patients by Bywaters and others[4] seems to point to substances proceeding from the injured limb being important in the genesis of renal failure On the first of these views Patey and Robertson[5] suggest that the crushed limb should be treated by intermittent positive pressure and tight bandaging to *promote* the absorption of œdema fluid and prevent its formation, while on the second view Curphey[6] advocates tight bandaging or tourniquet to *prevent* the absorption of œdema fluid and of the hypothetical kidney-toxin it picks up from damaged muscle As Duncan and Blalock remark, "further studies are indicated," and they are needed in man as well as in animals

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[2] Health Services in Industry London Industrial Welfare Society 1942 2*s* 6*d*

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[1] Duncan, G W and Blalock, A *Ann Surg* 1942, 115, 684, *Arch Surg* 1942, 45, 183

[2] Baker, S L and Dodds E C *Brit J exp Path* 1925 6 247

[3] Patey D H and Robertson, J D *Brit med J* 1942, ii, 212

[4] Bywaters E G L, Delory, G E, Rimington, C and Smiles, J *Biochem J* 1941 35, 1164

[5] *Lancet*, 1941, i, 780 [6] Curphey, E *Brit med J* 1941, ii, 176

proflavine Acriflavine was always preferred by dispensers, who found it easier to dissolve than proflavine, but as normally prepared acriflavine consists of a mixture of the hydrochlorides of 2 8-diaminoacridine and 2 8 diaminomethylacridinium and may vary considerably in different samples, while proflavine is as good an antiseptic, many times less toxic, and of constant chemical composition

On another page MITCHELL and BUTTLE, working with the Middle East Force, describe the results of applying proflavine as a powder to infected wounds in amounts ranging from 0 25 g to 2 0 g , but usually of 0·5 g or less, never more than three times, at intervals of 4–28 days In their series of 80 cases the powder was often strikingly successful when other methods had failed Neither toxic manifestations nor delayed healing were seen, and they say that where staphylococci are the *infecting organisms*, proflavine powder has proved more efficient in controlling or eliminating infection than any other drug so far tried Probably the drug is here being effectively used for the first time The introduction of the powder directly into the wound seems to be more logical than the time-honoured method of laying on, or lightly packing in a piece of gauze wrung out in a 1 in 1000 watery or oily solution, of which over 80% will be retained by the gauze Proflavine is soluble to 0 3% in saline,[6] and presumably this concentration is approached in the superficial layer of the wound, while 2 7 diamino-acridine hydrochloride is soluble to 0 4%, and appears to be even more promising Many of the other members of this series of compounds, though soluble in water, are precipitated in physiological saline, so despite their interesting properties they are not suitable for use in vivo

Annotations

DRAGON'S TEETH

AN hour or two before his death at the beginning of 1941 Varrier-Jones wrote to Sir Walter Langdon-Brown describing a scheme that had taken hold of him to have a course of lectures at Papworth on the diagnosis and treatment of tuberculosis The scheme, with change of venue but not of purpose, has materialised as his memorial, and on Sept 25 Langdon-Brown paid just tribute to the man and the idea before Wing-Commander Trail delivered the first Varrier-Jones lecture at Halton (see p 413) He retold the story of how Papworth settlement, which today has 500 acres of land, 100 cottages and factories with annual sales running into six figures, grew from one patient put as an experiment in the charge of a capable nurse in the village of Bourn Varrier-Jones, with his peculiar blending of medicine, economics, and sociology had, he said, changed occupational therapy into therapeutic occupation, and today when tuberculosis is once again increasing its inroads we should do well to reflect on this vision—which, as Trail later pointed out, Varrier-Jones had known how to reduce to theory and establish in practice Pendragon was the apt name given to Varrier-Jones by his contemporaries , his followers are harvesting not mutually destructive giants, but revivified citizens

HEALTH OF THE WAR WORKER

THE efficiency of war workers depends on their physical and mental health as well as that imponderable quality called morale The workers themselves are taking an interest in the factors in their environment which affect their health and efficiency, and a pamphlet[1] for their information, published by the Labour industrial health committee, is timely Prepared with the help of the Socialist Medical Association this deals with factory hygiene, food, clothing and transport, accidents, hours of work and factory medical services , the last section suggests how workers themselves can help to tackle health problems in factories If they are exhorted rather more freely to " insist " on safeguards and " demand " information than the conscientious employer would think necessary, it must be borne in mind that not all employers are conscientious , and that men and women still can and do lose life or health from carelessness on the part of the management, as reports of prosecutions show Thus workers are advised to insist on a full report, either from employers or from the factory inspector, on fumes and dust in their working atmosphere Spacing of workers is well discussed and they are told that a barrier of glass or mica between those working face to face *at a distance of a foot or two* will help to prevent the spread of colds or influenza and thus the loss of many weeks of work The pamphlet notes that lavatories in factories are often ill-lit, rarely painted and *have defective flushes or cracked pans* Hand basins, soap and towels may not be conveniently placed for washing after the use of the closet In such cases workers are advised to ask the management for better equipment, and also to make sure that they themselves conform to the standards they would require in their own homes They are reminded of the great importance of washing facilities, since much industrial disease can be avoided if the skin is kept clean They are advised, too, about detergents, and warned that turpentine, benzene and other strong cleansing agents may themselves cause dermatitis Under the Factory Act women who work standing are entitled to a seat for use when opportunity offers This may come as a surprise, the pamphlet suggests, to many of them, and adds with realism that in scores of factories " this section is just a bad joke and is bound to remain so " , but the principle of periodic rests is sensibly explained, and workers are reminded that the clever worker, like the clever footballer, saves himself when he can Output goes up when everyone is made to have a rest pause The comfortable height for a work bench was estimated by the Industrial Fatigue Research Board in 1927, and the figures are given again here—38 in for a man and 37 in for a woman, It seems astonishing that this, too, should not be common knowledge or even common practice The section of the act requiring the management to provide a separate room in which employees working with lead, arsenic or other poisonous substances can take their meals is difficult to enforce because workers themselves are apt to be casual about the danger , for the same reason it is sometimes difficult to get them to make use of protective clothing The pamphlet puts the case for proper precautions clearly and wisely, and suggests that employers should be made to provide protective clothing outside the list of trades where it is now compulsory For example, it seems that many of the 15,000 serious accidents to toes of workers yearly could be avoided if boots with reinforced toe caps were provided for those handling weights Transport difficulties are still hindering production and adding to the fatigue of those already working long hours, and trade unions are advised to take their complaints to the regional production boards Many accidents could be avoided by proper training of new workers , any firm under the Essential Work Order can be required by the Ministry of Labour to provide an adequate training scheme for new entrants, and workers are advised to see that this is done They are also encouraged to form safety committees, run by

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[1] Health of the War Worker London Labour Research Department, 6, High Holborn, W C 1 1942 Pp 40 6d

They describe four cases with a history of only a few hours' pain before admission Removal of a normal appendix was followed by radiographic examination which showed ulceration in the first part of the duodenum All cases showed a slightly raised temperature and pulse-rate, tenderness in three cases in the right iliac fossa and abdominal rigidity in two cases Medical treatment was instituted but did not succeed in securing disappearance of the X-ray signs A W Franklin, reporting two cases of duodenal ulceration in childhood, deals with still other clinical features His first case in an infant past the neonatal period exhibited the features of a normal, healthy baby who made a good start with feeding and weight gain and then, after an upper respiratory infection, became "unhappy, refused feeds, slept badly, cried much and became difficult to handle" Changes in food produced transient improvement but a general downhill course led to a fatal ending and the finding of a duodenal ulcer at autopsy with an eroded vessel in its base. In Franklin's other case, a boy of nine years, not only was a duodenal ulcer discovered radiographically and healing secured by medical treatment but there appeared to be a definite psychological factor present in the nature of an anxiety state, which the psychologist predicted "would play a strong part in producing a recrudescence of the symptoms at a future date" Clearly peptic ulceration in infancy and childhood is uncommon but because of its rarity it may be overlooked The clinical pictures emerging from these papers should make diagnosis easier The possible evolution of the child with peptic ulcer into the adult with the same complaint invites speculation

AMERICA'S MEDICAL POOL

LAST year in the medical schools of the United States 20,867 men students were in training, of whom 4884 graduated, and 1164 women students, of whom 279 graduated.[1] This year there are expected to be 22,674 students, but in response to the needs of war-time they will graduate in three years instead of four, these students will already have spent three or even four years at college before entering a medical school All except four of America's sixty-odd medical schools have accepted this principle of acceleration of the curriculum, but there is local option as to how it is to be carried out Most of the schools, however, have chosen the method of accepting a new entry of students every nine months instead of only once a year, and by allowing students to graduate every nine months instead of annually This means cutting out the long vacation, which has created a real problem for many hard-up students who hope to earn enough in the holidays to pay their college fees But the Kellogg foundation has generously come to their help with a grant of 10,000 dollars to each medical school, from which loans will be made Congress has also voted 5 million dollars for loans to students Another problem raised by the speed-up is that in seven states the laws will have to be altered before these accelerated graduates are eligible for licences to practise Hospitals will also have to consider how their system of interneships, which last a year, can be modified to cope with the nine monthly influx of new graduates. It is unlikely that the period of interneship will be shortened but it is suggested that, to begin with, the juniors may be posted to affiliated hospitals. The standards of medical education will not be lowered to meet the new timetable but the curriculum has been reconsidered to see where minor adjustments and better coördination can save time Otherwise the only alteration has been the addition of such topical subjects as military medicine, first-aid, treatment of war wounds, tropical medicine and industrial medicine The staffs of the medical schools have shouldered a heavy war-time burden, for besides the speed up they have agreed to a 10% increase in the numbers of entry classes, and many of the younger teachers have been called up Forty schools have organised affiliated hospital units which will provide the army with staffs, accustomed to working together, who are ready to assume the medical responsibilities of a service hospital These units are of three types general hospitals, evacuation hospitals, and surgical hospitals It is estimated that the next three years should provide over 21,000 new doctors, 5000 more than in normal times The wastage of students, for which due allowance has been made, is based on figures for 1937–41—i e, 16% in the first year, 5% in the second, and 1% in the third By these new arrangements the authorities hope to add two new doctors to the American Medical Directory for every one that will disappear from its pages

LORD NUFFIELD—RCS MEDALLIST

ON the front of the honorary medal which Lord Nuffield received at the President's hands on Sept 30 is the motto of the Royal College of Surgeons and on the reverse is a picture of Galen contemplating a human skeleton Sir Alfred Webb Johnson brought out this wider conception of the college's function when he spoke first of the advancement of surgery for the benefit of mankind and then of the preservation of the broad basis on which the whole edifice of biological knowledge is built Among the 18 previous recipients of the medal are surgeons such as Paget, Lister and Makins, but also men like Richard Owen and Elliot Smith and J A Murray whose claim on the gratitude of posterity is even wider, the second medallist resigned his surgeoncy at a county hospital to take a house in Tavistock Square, where in the billiard room he dissected birds, beasts and fishes, to the lasting benefit of his kind The scope of the medal was already wide enough to include a recipient whose liberal acts have conduced to the advancement of the healing art There is scarce a Dominion, as Mr Gordon-Taylor put it, that has not felt the generous warmth of his outstretched hand, particularly in the care of the maimed, the damaged or the scarred Lord Nuffield admitted it had been his youthful ambition to be a surgeon, instead he had become what Gordon-Taylor called the present-day Vulcan, the blacksmith's god, skilled in metals, the artificer of wondrous things We have already had examples of how his engineering craftsmanship has shortened, or indeed wiped out, the usual lag between scientific conception and delivery of some of the urgent implements of medicine The Minister of Health, who was present at the moving ceremony, expressed his satisfaction that Lord Nuffield had not lavished money on expensive buildings, but had been concerned with the men and women who were to work in them For himself he would praise him for the chairs of social medicine and child health

QUEEN ELIZABETH HOSPITAL FOR CHILDREN

THE first meeting last Friday of the managing board of this amalgamated hospital was followed by an austere but festive luncheon attended by the Primate and the Home Secretary The story of the North-Eastern (just 75 years old) and the East London is like a Grimm's fairy tale in which there was no doubt from the beginning that the two were destined to meet and live together happily ever afterwards Both started like human babes without material possessions but with large heads and rapid hearts Of such is the voluntary hospital tradition and Sir Ernest Pooley, speaking for King Edward's Hospital Fund, expressed the hope of all concerned that, while the State might control and plan, the individual management would be left

EPSOM COLLEGE —A Christie pension of £89 p a will be awarded in November to a necessitous medical man, fully 55 years of age, who has been registered for five years Forms of application may be had from the secretary's office, Epsom College, Surrey, and must be completed and returned by Oct 26

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[1] *J Amer med Ass* 1942 119, 1263

SPINAL ANÆSTHESIA FOR CÆSAREAN SECTION

THOSE who object to the use of a spinal anæsthetic for cæsarean section say that there is a twofold danger for the mother—the risks of a sudden drop in blood-pressure and of a violent reaction to the anæsthetic because the pregnant woman is unduly sensitive to the drug The first can be prevented by the proper use of ephedrine, and this procedure seems unobjectionable in these unshocked patients, there was no example of the second complication in a series lately reported by R C Thomas[1] In 121 cæsarean sections done under spinal anæsthesia one mother died nine days after operation from pulmonary embolism, and in the 123 children born there was one stillbirth and 4 deaths from various causes All his patients were given ephedrine, gr $\frac{3}{4}$, and atropine, gr $\frac{1}{100}$, forty-five minutes before operation Sedative drugs such as morphine and hyoscine were avoided, and the babies were therefore born without *respiratory depression If necessary*, ephedrine was repeated during operation Thomas does not use spinal anæsthesia for any woman with a systolic pressure of less than 105 mm Hg, these he treats by transfusion and if the pressure cannot be raised to an appropriate level he gives them gas, oxygen and ether Since many patients requiring cæsarean section have placenta prævia and are liable to hæmorrhage, they are moved with great gentleness and a supply of blood is at hand in case emergency transfusion should be required In all but 3 cases in his series the drug used for spinal anæsthesia was heavy 'Nupercaine,' but the exact dosage is not stated The mothers remained calm and cheerful throughout, and this was particularly noticeable in 5 women operated on during air-raids Apart from the 121 cases mentioned there were 8 others to which a spinal was given and in which anæsthesia was not sufficient for surgical requirements They were given supplementary anæsthesia and were therefore not included in the series In the absence of fuller details it is impossible to say *whether the drug or the technique was to blame for these* failures The advantages of spinal over general anæsthesia were well shown there was good relaxation of abdominal muscles, a well contracting uterus and no respiratory depression in the babies Infants reluctant to breathe were given an injection of lobeline into the umbilical cord, none of the infant deaths could be attributed to the anæsthetic

COMPLEMENT FIXATION IN TYPHUS FEVER GROUP

THOUGH the Weil-Felix reaction with *Proteus OX19* may indicate the presence of a rickettsial disease, it does not differentiate between typhus and Rocky Mountain spotted fever Since the clinical differentiation between these diseases is very difficult the only means of diagnosis in the past has been the inoculation of guineapigs with blood from the patient immediately it has been withdrawn Many unsuccessful attempts at complement fixation have been made with various antigens such as alcoholic extracts of organs of fatal cases, extracts of infected lice, infected guineapig tissues and infected tick eggs Probably all were unsatisfactory because an insufficient number of rickettsias were present In 1936 Castaneda[2] obtained positive complement fixation in cases of active and past infection with Mexican typhus and Brill's disease, using rickettsia from X-rayed rats infected with endemic typhus A prolific source of typhus rickettsias was made available by Cox's discovery[3] of their ready cultivation in the yolk sac of the developing chick embryo Bengston[4] has used as an antigen rickettsia grown by this method in a specific complement-fixation reaction for "Q" fever and endemic typhus Bengston and Topping[5] have more recently demonstrated that the test will clearly differentiate between endemic typhus and Rocky Mountain spotted fever Using an antigen prepared from endemic typhus, they *found that in a case of laboratory infection* the complement-fixation reaction was positive to a titre of 1/8 on the 10th day, rising to 1/4096 on the 15th day, and then dropping slowly to 1/512 on the 180th day The Weil-Felix reaction was positive in a dilution of 1/80 on the 6th day and 1/320 on the 9th day, but fell more rapidly In 53 cases of past infection the titre was 1/16 or higher even as long as 5½ years later In contrast, 18 specimens from 14 cases of active Rocky Mountain spotted fever were all completely negative Now Plotz and Wertman[6] have confirmed the usefulness of the test by using an antigen of Rocky Mountain spotted fever rickettsia grown in tissue cultures, using the semi solid agar method in Kolle flasks Sera from 9 cases of Rocky Mountain spotted fever all gave positive complement fixation The earliest positive serum was obtained on the 12th day of illness with a titre of 1/24, and the serum of the oldest case who had had the disease 4½ years previously was positive in a dilution of 1/12 All sera from patients who had had Brill's disease or various other illnesses were completely negative A corresponding result was obtained with sera from infected guinea pigs Though more or less specific for the typhus group of fevers, the Weil-Felix reaction being an indirect test has never been happily accepted by many workers These new antigens may give us a simple inexpensive direct test for diagnosing this group of diseases It will be interesting to learn if the complement fixing antibodies are related to the neutralising antibodies If the two antibodies are comparable this will offer a simple means of testing the efficacy in humans of the various anti-typhus vaccines in use

PEPTIC ULCER IN CHILDHOOD

THE early onset of some peptic ulcers has been confirmed in the course of mass investigations of young soldiers with dyspepsia, according to Tidy and others,[7] and now three papers have appeared on peptic ulcer in childhood[8] K J. Guthrie describes nine cases, all coming to autopsy at the Glasgow Royal Hospital for Sick Children in the period 1914–41 All but one were in infants under six months of age and the ulcers seem to have originated after birth Sexes were equally affected and eight of the ulcers found were duodenal, one being gastroduodenal Guthrie draws attention to the peculiar circumstances in the newborn period which predispose to ulceration Circulatory instability, asphyxia and umbilical sepsis may play a part, and any damaged area becomes liable to digestion by the gastric juice, which according to recent work reaches a high degree of acidity in the first forty-eight hours of life Another possible factor is irritation of the mucosa by unsuitable feeding or drugs, of which castor oil is the most blame*worthy and is still too often used by midwives* In the Glasgow series the ulcers were small, never exceeding 1 cm in diameter and almost exclusively lying in the posterior wall of the duodenum above the ampulla of Vater Clinically, hæmorrhage from the stomach or bowel seemed to be the most characteristic sign of peptic ulcer in infants It might be the initial feature, it might be preceded by symptoms of indigestion, or collapse might occur due to latent hæmorrhage Peritonitis and perforation were not seen in the Glasgow series although others have recorded these complications Pyloric spasm from ulcer may produce symptoms similar to those of pyloric stenosis In children past the age of infancy, according to D G W Clyne and J Rabinowitch, duodenal ulcer may closely simulate acute appendicitis

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[1] *J Obstet Gynæc* 1942, 49, 247
[2] Castaneda, M *J Immunol* 1936, 31, 285
[3] Cox, H R *Publ Hlth Rep Wash* 1938, 53, 2241
[4] Bengston, I *Proc Soc exp Biol N Y* 1941, 46, 665, *Publ Hlth Rep Wash* 1941, 56, 649, 1723
[5] Bengston, I and Topping N *Amer J publ Hlth*, 1942, 32, 48
[6] Plotz, H and Wertman, K *Science*, 1942, 95, 441
[7] *Proc R Soc Med* 1941, 34, 21
[8] *Arch Dis Childh* 1942 17, 82, 95, 102

TUBERCULOSIS IN WAR TIME

REPORT OF THE MRC COMMITTEE

THE committee appointed in the autumn of 1941 by the Medical Research Council at the request of the Ministry of Health to investigate the war-time increase in tuberculosis, particularly among young women, has brought in its report [1] This differs from the council's other special reports in describing no new researches but presenting rather a critical review of available evidence In the committee's view this evidence is already sufficient to justify administrative action The findings and the recommendations based on them are as follow

FINDINGS

There has been a real increase in deaths from tuberculosis since the beginning of the war

All age-groups have been involved to some extent in the increase, and the participants up to the present have not been predominantly young women—as seemed likely early in the war—but include, particularly recently, children and the older male age-groups as well

Although there has been a slackening in the increase in tuberculosis mortality in the second year of the war—e g , in young adult females—the position is still unfavourable in relation to the prewar figures

In view of the similar, though only temporary, slackening in the rise of tuberculosis at a corresponding time in the last war, together with what is known as to the course of tuberculosis, we must be prepared for a further increase as hostilities continue

A disquieting feature of the present position is the increased mortality of children from tuberculous meningitis Measures have been indicated which should reduce the deaths from bovine infection To reduce human infection it is necessary not only to take special measures with children but also to control pulmonary disease in the adult The suggestions which have been made for the early detection, segregation and adequate treatment of the tuberculous adult should have an indirect effect in reducing infection among children

RECOMMENDATIONS

The implementing of these recommendations should be accompanied by information and propaganda both to the medical profession and to the general public

Mass radiography —Subject to limitations of apparatus the controlled use of mass radiography before, or as soon as possible after, employment should be extended, especially (*a*) in the Services (*b*) among men and particularly women entering the war industries, and (*c*) among those taking up certain other occupations A single mass X-ray examination should be carried out, where practicable, upon those already employed in certain industries—e g , munition factories As an extension of the preceding, but probably practicable to a much less extent in war-time, X-ray examinations should be repeated at regular intervals upon certain groups of the population including (*a*) employees in factories which contain large numbers of young adults, (*b*) nurses and medical students and (*c*) merchant seamen Where speed and cost dictate, the miniature method is the one of choice for mass radiography In certain circumstances it may be practicable to make use of existing full-size apparatus

Institutional accommodation for the treatment of tuberculosis is urgently required A good deal is now available but cannot be used because of lack of nursing and domestic staffs Until these staffing problems are solved, no advance can be made in institutional control of the disease

Financial provision —In view of the special character of the disease and the prolonged treatment usually required, special financial provision greater than that obtainable under the National Health Insurance scheme should be made for persons with tuberculosis

Rehabilitation should be considered an essential part of the treatment of tuberculous persons and arrangements should be made for the gradual return to industry of such patients on a basis of part-time or modified work During the period of rehabilitation a supplement to wages should be provided, in order that an adequate standard of living can be maintained by the patient and his family

Examination of all home contacts must be energetically pursued, a first examination being the chief requirement The re-examination of children under five years of age, and of young adults, is highly desirable X-ray examination, and re-examination at intervals, should be undertaken for all cases of pleurisy and erythema nodosum in young people, whether institutional treatment has been given or not

Mental hospitals —The special conditions here prevailing make it desirable that an effort should be made as soon as practicable to X ray periodically all residents of such institutions

General working conditions —It is of the first importance that continued watchfulness should be maintained upon the working conditions of young employees particularly in regard to hours of work, transport difficulties, rest periods, factory canteens and hostel arrangements, and their relation to sickness absence

Milk —The pasteurisation of milk should be extended throughout the country, and, where this is not practicable, all milk consumed by children should be boiled or dried milk should be provided

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MILK IN THE HOLIDAYS

MORE and more school-children are drinking milk before the war a little over half of them were getting it and now the latest available returns show a rise to 79 8% in England and Wales and 65 1 % in Scotland Unfortunately school holidays are apt to make a break in these good habits, and the difficulties of continuing milk distribution during these gaps are considerable The Children's Nutrition Council [1] have been interested in the efforts made by local authorities to bridge the gaps

The children show varying readiness to attend school or some other centre merely to receive a third of a pint of milk, and of course it is not easy to provide staff to serve it out The Edinburgh CNC has made a special study of the situation Holiday distribution of milk had been tried in 1938 unsuccessfully, but urged by the CNC the education committee agreed to try again during the Easter holidays this year The local press published articles and, later, pictures of the children taking milk , a letter from the council was published and bills prepared by the education committee were distributed to clinics, hospitals and other centres, and the branches of coöperative and other multiple stores The time of distribution was 11 30 A M –12 noon and 32 schools were used as distribution centres—roughly a quarter of the schools under the education authority There was a fair response, the consumption per day being 27% of the usual daily school consumption or an average of 9770 children daily as compared with an average of 35,000 in term time All children under 15 were included so that the toddler could come along with the older child who had been told off to mind him

The CNC had some suggestions to make for improving results another time Thus they think the hour was too late too near dinner time Opening of a larger number of schools would have relieved congestion, and given many more children the chance to attend their own schools and avoid a longer walk than they were used to Some schools had no straws The local branch of this council, with its affiliated organisations and such bodies as women's guilds and mothers' committees could provide rotas of responsible voluntary helpers and many teachers would be prepared to give odd days in the holidays There seems, indeed, plenty of good will to help to maintain the holiday distribution, and get the milk to its target

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[1] *War-Time Bulletin* No 20 Published by the CNC 6 East Common Harpenden Herts

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MESSRS Southalls inform us that they are now able to supply their 'Southalamide' gauze to doctors and hospitals in 6 yd , 3 yd and 1 yd packets This sterile surgical gauze is impregnated with approximately 30% sulphonamide and the manufacturing process is designed to ensure slow absorption, and prevent the shedding of the medication Prices of this new wound dressing may be had from Messrs Southalls, Charford Mills, Saltley, Birmingham, 8

Special Articles

RECENT GERMAN VITAL STATISTICS

RICHARD M. TITMUSS

THIS paper is an attempt to place on record some recent German mortality and morbidity statistics. The data are admittedly inadequate and should be interpreted with caution, but the material is all drawn from official German publications. No attempt has been made to examine the general death-rate because, among othes reasons, the composition—either qualitatively or quantitatively—of the population at risk is not known, and because the deaths of men in the armed forces from natural causes are, as far as I know, excluded from the official reports.

MORTALITY

Infant Mortality.—For the "Great Towns" of the Reich the death-rate per 1000 live births fell steadily from 92.9 in 1929 to 60.5 in 1934. Since then the rates have been

1935	62.9	1939	59.6
1936	62.9	1940	62.0
1937	60.7	1941	58.8
1938	58.3		

The first quarter of 1942 registered the highest rate since 1933, namely, 74.1. In the four previous years the rate had been 61.3 (1938), 65.2 (1939), 69.4 (1940) and 73.5 (1941).

Ages 1–20.—As the Registrar-General for England has repeatedly shown in his annual reviews, one of the most sensitive indices to environmental conditions is mortality among infants aged 1–5 years. Before the war the death-rate in this group was steadily rising in the German great towns and the combined rate for the two years 1940–41 was higher than that during 1931–33, when the urban population of Germany was suffering severely from the effects of the world economic slump. For the 62 great towns (with populations exceeding 100,000—a total of 24½ millions) of "Greater Germany" the number of deaths in this age-group in recent years has been 5670 (1939), 6062 (1940) and 6404 (1941)—a rise of 13% over 1939, although the total population of the great towns has not changed significantly. Before 1939 the number of deaths in the 56 great towns of the Old Reich—with a fairly stable total population around 20 millions—had been rising steadily; in 1935 there were 3866, in 1936, 4307, in 1937, 4220, and in 1938, 4675. The change in the birth-rate cannot account for the rise between 1939 and 1941 because the major increment in births took place in 1934. When we compare the first 28 weeks of 1942 with the corresponding period for previous years we find that the number of deaths has risen from 3618 in 1940 to 4355 in 1942. In addition to the rise of 13% between 1939 and 1941 there has been a further increase during the first 28 weeks of 1942 of 20% over 1941. The winter cannot be blamed for this increasing mortality because, from the point of view of health, climatic conditions were not severe.

Similarly with school-children, for we find that the deaths have risen from 4336 in 1939, to 4337 in 1940 and 4880 in 1941. On the top of this record number of deaths in 1941 for the age-group 5–15 a further increase of 22% has occurred during the first 28 weeks of 1942 over the corresponding period for 1941.

In the age-group 15–20 mortality has increased by 20% (the first 28 weeks of 1942 over 1939). This rise, moreover, excludes the deaths of young men in the armed forces both from disease and hostilities. The deaths in the age-groups quoted also exclude air-raid casualties.

SPREAD OF INFECTIOUS DISEASES

Contributing to the increases in mortality among children scarlet fever deaths in 1941 reached 1327, the highest number of deaths in any single year since at least 1929; the previous record number in any one year since 1929 was 635 in 1940 and 445 in 1939. Diphtheria and whooping-cough mortality has also risen, the combined total for 1940–41 being 7005 as against 4862 for 1937–38. Between 1932 and 1937 mortality from both diphtheria and scarlet fever among children under 15 rose steadily, the increase in both cases being roughly 50%.

In addition to the rise in mortality there has been a great increase in the number of new cases of infectious diseases; the numbers in all areas of the Old Reich were

Year	Diphtheria	Scarlet fever	Whooping-cough	Dysentery	Trachoma
1936	149,973	125,679		4816	625
1937	146,733	117,544		7545	697
1938	149,627	114,243		5265	533
1939	143,585	129,495	78,941	6190	652
1940	142,058	138,759	126,994	12,790	2979
1941	173,052	247,744	93,694	8641	2770

These increases are striking enough but the first 28 weeks of 1942 show a further rise over the corresponding period of 1941. For all areas of "Greater Germany" the number of diphtheria cases has risen by 42,000 to 130,000, while scarlet fever cases are up by 101,000, to 238,000.

TUBERCULOSIS

Tuberculosis is always a sensitive barometer of the *extent to which a community is caring for its people.* New cases of respiratory tuberculosis in all areas of the Old Reich have been as follows

	Quarter—			
Year	I	II	III	IV
1935	15,649	16,200	18,186	10,341
1936	15,835	16,095	18,218	10,579
1937	16,881	17,787	15,034	13,868
1938	16,052	16,441	14,233	13,694
1939	19,431	18,448	15,816	14,195
1940	17,096	21,778	17,514	16,879
1941	20,660	24,155	20,266	16,962

Taking the averages for the years 1935–38 as a base-line the increases amount to: 1941, first quarter 28%, second quarter 45%, third quarter 23%, fourth quarter 40%, all quarters 34%. For other forms of tuberculosis the 1941 notifications record a rise of 92% over 1939 (before this year cases were not notified). The three years 1939–41 have produced 40,000 *additional* new cases of respiratory tuberculosis. Just as morbidity has been rising so has mortality. The mortality from all forms of tuberculosis at all ages in the great towns of "Greater Germany" were as follows (rates per 1000 total population)

	Quarter—				
Year	I	II	III	IV	Total
1939	0.76	0.72	0.56	0.61	0.66
1940	0.82	0.81	0.63	0.63	0.73
1941	0.84	0.82	0.69	0.64	0.76
1942	0.88				

It is worth noting that the rate for the first quarter of 1942 is higher than that of the years 1932 and 1933. A considerable rise is again revealed when we examine the death-rate from all forms of tuberculosis in two large groups of great towns. Group 1, the Rhine and Westphalia, comprises 19 large towns such as Cologne, Essen, Dortmund, Dusseldorf, Duisburg, Gelsenkirchen and others, with a total population of 5½ millions. Group 2 relates to 14 great towns (total population nearly 5 millions) in Silesia, Saxony and South Germany, such as Leipzig, Dresden, Chemnitz, Breslau, Nuremberg and Munich. Taking the years 1936–38 as a base-line we find that weekly deaths in the (by now) heavily bombed towns of group 1 rose by 10% in the first quarter of 1942 and by 20% in the second. In group 2 the increases are 12% and 16% respectively.

When it is remembered that all these war-time statistics relate to civilian deaths only and that many patients suffering from tuberculosis will have been removed from the towns in western Germany it may well be that the true increase in this disease is much higher than is estimated in this paper.

These figures do not, of course, cover a very large field but they do comprise, in the main, significant indices. Moreover, the tuberculosis statistics may considerably understate the actual situation, particularly in western Germany, not only because of the effects of air-raids but because of the removal of some millions of young men from the total population at risk.

TUBERCULOSIS IN WAR TIME

REPORT OF THE MRC COMMITTEE

THE committee appointed in the autumn of 1941 by the Medical Research Council at the request of the Ministry of Health to investigate the war-time increase in tuberculosis, particularly among young women, has brought in its report[1] This differs from the council's other special reports in describing no new researches but presenting rather a critical review of available evidence In the committee's view this evidence is already sufficient to justify administrative action The findings and the recommendations based on them are as follow

FINDINGS

There has been a real increase in deaths from tuberculosis since the beginning of the war

All age-groups have been involved to some extent in the increase, and the participants up to the present have not been predominantly young women—as seemed likely early in the war—but include, particularly recently, children and the older male age groups as well

Although there has been a slackening in the increase in tuberculosis mortality in the second year of the war—e g , in young adult females—the position is still unfavourable in relation to the prewar figures

In view of the similar, though only temporary, slackening in the rise of tuberculosis at a corresponding time in the last war, together with what is known as to the course of tuberculosis, we must be prepared for a further increase as hostilities continue

A disquieting feature of the present position is the increased mortality of children from tuberculous meningitis Measures have been indicated which should reduce the deaths from bovine infection To reduce human infection it is necessary not only to take special measures with children but also to control pulmonary disease in the adult The suggestions which have been made for the early detection, segregation and adequate treatment of the tuberculous adult should have an indirect effect in reducing infection among children

RECOMMENDATIONS

The implementing of these recommendations should be accompanied by information and propaganda both to the medical profession and to the general public

Mass radiography —Subject to limitations of apparatus, the controlled use of mass radiography before, or as soon as possible after, employment should be extended, especially (*a*) in the Services, (*b*) among men and particularly women entering the war industries, and (*c*) among those taking up certain other occupations A single mass X-ray examination should be carried out, where practicable, upon those already employed in certain industries—e g , munition factories As an extension of the preceding, but probably practicable to a much less extent in war-time, X-ray examinations should be repeated at regular intervals upon certain groups of the population including (*a*) employees in factories which contain large numbers of young adults, (*b*) nurses and medical students, and (*c*) merchant seamen Where speed and cost dictate, the miniature method is the one of choice for mass radiography In certain circumstances it may be practicable to make use of existing full size apparatus

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Financial provision —In view of the special character of the disease and the prolonged treatment usually required, special financial provision greater than that obtainable under the National Health Insurance scheme should be made for persons with tuberculosis

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In England Now

A Running Commentary by Peripatetic Correspondents

I HAVE just been to a war-time christening and it happened this way. The matron of our largest nursing-home had seen it grow into a well-equipped and very efficiently run institution of some 20 beds when the bombshell fell. Quite literally, too, but luckily at some little distance, so that owing to the precautions taken no-one was hurt. Nor was the house badly damaged, as damage goes in our much bombed town, but its days were over as a nursing-home; windows there were none, doors were few and the roof resembled a colander. And, as I told her next morning when we surveyed the wreckage, how could I send her patients if the rooms weren't even dusted? True, the dust was mainly two inches of ceiling plaster, but from whatever angle you look at it, air-raids are a dirty business. With her usual indomitable pluck, matron took the best available house in the neighbourhood, alas with far less than her 20 beds, and there, when our patients are lucky enough to secure an empty bed, we gladly make the 8-mile journey. In her more spacious country surroundings she decided to keep chickens, and today the first four hens had arrived, ready, we hope, to make some amends for that egg dropped by the Luftwaffe. "I'm christening them today," she said, "and of course in these days we think first of Winston Churchill, so they are to be Blood, Tears, Toil and Sweat." Though perhaps the chicken world manages those things more easily, I thought of the curse laid on the daughters of Eve and how appropriate the names were for the most industriously maternal of all our domestic animals.

* * *

They had a sing-song in the hostel in which I live, and I am ashamed to say I didn't go. But it was difficult not to hear them singing, and with each song memories I did not wish for came flooding into my mind. Presumably the psycho-auditory centres keep accurate copies of those scenes which the psycho-visual centre and the frontal lobes have long since and carefully repressed. Normally the past does not distress me in the least; I have carefully sifted out for consciousness those scenes which make for happiness. But hearing Auld Lang Syne brings detailed pictures of the other times I have sung it, of the people at school, at Oxford, at a Christmas dance, whose acquaintance, since I am unlikely to renew it, it would perhaps have been better to forget for good. Smells are as bad. Walking along a most innocent road the other day I was first assailed with a momentarily irrepressible longing for a house on an estuary in Wales and then within twenty yards for pine trees and honeysuckle in Georgia. But on the whole there are more smells than songs, and it is safer to have an open nose than an open ear; though there again, I am thankful to say, they change the tunes so often that it is only the very best—*Donkey Serenade* and *Begin the Beguine* and *Waltzing Matilda*—which last long enough to repeat the memories of a few years back. Such few as there are fill me with admiration for the memory-repression mechanisms of the other parts of my brain. I can only think of one song whose immediate memory-associations are wholly good—*Steal away*. It reminds me of a time when an old lady had died, and a thousand negroes sat on the lawn of her plantation singing that song with tears running down their cheeks, so beautifully that she must surely have heard. For the vividness of that one memory I can forgive my psycho-auditory centre a lot.

* * *

A country practitioner whom I met last month showed me the records of 20 patients who had developed hypertension within two months to ten years of hysterectomy. "Why don't you publish them?" I asked. "Probably I should be told that my observations were cold potatoes, Blitz having recorded 500 cases in 1921 and Krieg having written a book about it." In the bright new world I hope they will have a room or two in Health and Hygiene House where such reports from the front line of medicine can be examined and sifted. Possibly also they will have their own broadcasting station. I seem to hear the droning voice of Pontifex Maximus FRCP giving one of his bed-time talks to GPs: "— is the most likely theory of hyperpiesia. Goldblatt found that by constricting the renal arteries of animals he produced hypertension, then Wilson and Byrom went on to show that they could get the same result by constricting one artery. That it isn't only a renal threat that causes a heightening of the blood-pressure was pointed out by Raab, who recalled that it was experimentally produced by restricting cerebral blood-supply. It is as though Dame Nature said, 'The fate of a vital tissue is at stake, we must give it more blood.' As in shock she is quite willing to run risks with the whole in order to save a vital part. And the poor, blind old dear doesn't know when to leave off. Probably she is encountering a condition that was so rare in the first million years or so of her wet-nursing of us that it wasn't worth bothering about. Why she should translate a hysterectomy as a threat to what she must regard as the most vital organ of all, I'll leave you to guess. It would be interesting to know if constriction of the spermatic arteries also raises the blood-pressure. If this theory is right it most certainly should, and I feel in my bones that mine would. How does it act? Heaven alone knows, but probably by the old primitive mechanism of a chemical acting on the autonomic and the autonomic stimulating the production of the chemical, a circular reinforcement. Of course this is all theory. Probably it is impossible to record any events in the natural world truthfully. In fact truth as a static, unchangeable reality—apart from those man-postulated artefacts, words and figures—is a human misconception. There is no such thing as truth, everything is changing, moving, angled and relative. But it makes a very workable hypothesis to say that truth exists. It might be called 'The Master Hypothesis.' So with this hypothesis of the cause of hypertension, the truth is But I see my time is up. Good-night GPs. Good-night."

* * *

A butterfly orchis in a vase in front of me was picked ten days ago and seems unchanged; all the pollinia are in place. Others in the copse have been fertilised by long-tongued moths, the only insects which are capable of doing it, and are starting to wither. I think the youthful appearance of many single middle-aged people may be on the same parallel. Thanks to this infinite patience and this cold-storage of charm not many flowers, only some of the more highly specialised, are, I fancy, born to blush unnecessarily in nature. Another display of the same qualities is seen in courtship. Any reflective watcher of animal life must often have been struck by this contrast: the length of it, the elaborate ritual, for which so many dress up or undergo structural change, prepare for months, sometimes their whole lives, all this, and then the rapid, hurried, darkened, rarely seen consummation. Marie Stopes and others have pointed out how prolonged love-play conduces to fertility, and we old country practitioners know how the lad and lassie in Love Lane who struggle at length and victoriously against the scowling gods of propriety, the frowning powers of Church and State, the angry parental deities, nearly always produce a bonny babe, whereas the suburban know-all who treats his consummation as an afterthought to a wash and brush-up goes bald and childless. Incidentally contraceptives may stop fertility in more ways than in preventing spermatozoa getting to the ova. My point is this. Prolonged courtship, the aim of which is that the one man should meet the only woman in the world or as near to this novelists' ideal as nature can manage—a discarding of unsuitable genetic combinations, a long process of selection which is abandoned in times of racial stress—demands a contradictory attitude of mind. It must be one that is so intensely attracted that his or her whole mind is ruled by that attraction, and yet at the same time inhibited, in the human mind by various creeds, customs and codes (I wonder what form this takes in the mind of the rabbit—The Big Bad Buck—The Weasel Banshee?), lest consummation come too early. This surely is one of the bases from which one should start the study of sexual taboo.

* * *

"Well," said Helen with a sigh, "I suppose it's got to be done—shall we make a start?" I rose reluctantly to my feet and together we went out to the garage, for the task in hand was that which has faced so many of us lately—laying up the car. Dear old George. I felt a fresh uprising of regretful affection as I gazed on his war-worn paint, but, as Helen said, it had to be done, and so we got to work. I sorted tools and greased lamps and bright parts (vide advice in the daily press), while Helen applied herself to cushions and upholstery with the energy of a terrier at a rabbit hole. For a time we worked in silence, but for the whirr of the vacuum cleaner, and I knew that her thoughts were, like mine, with *all* the occasions in which George had played so large a part: not only his stalwart help in my professional work, but those happy care-free holidays, our annual outings to Wimbledon and Twickenham and scores of others. Oh, well some day. Suddenly the roar of the vacuum stopped and Helen emerged from the car holding out a small piece of green cardboard. "Look at this," she said, "it was behind a cushion." It was a car-park ticket for a point-to-point meeting in April '39, and my thoughts raced back over the shadowed years between. I remembered it so well, as lovely a day as April ever provided and as we walked round the course before the first race the larks were singing and Spring was everywhere. There was the usual cheerful crowd of men and girls in tweeds, children home for the holidays, country folk complete with perambulators, raucous-voiced tipsters, horsey-looking men, picnic luncheons laid out behind the cars, and, incidentally, the racing. It was a *good* day, and I remembered, too, Helen's annoyance at not having backed a horse called "Peter's Pet," which won at long odds. She knew nothing, of course, about its capabilities, but she had just met a young friend called Peter with his very new fiancée and that should have been a good and sufficient reason, in her view, for backing it. Suddenly she laughed. "It was broken off soon after," she said, so I knew that her memory was working on the same lines as mine. Presently George's toilet was completed, and shrouded in dust sheets he was left to rest until happier days. So now, to save petrol and rubber, I go my rounds in Helen's little 8-h.p. bus, and she does her share by carrying laden baskets up the mile of hill from our nearest shops.

* * *

Housemen lack none of the courage and initiative of their predecessors, at any rate mine doesn't. His interest ranges over the whole field of medicine, with a strong bias towards psychiatry. One patient had a very severe tic, which he asked permission to treat by psychotherapy. Next day I asked how it was progressing, and was told that after two hours' intensive treatment he found he had been talking into her deaf ear. Later, we admitted a diabetic for observation who appeared to be developing psychiatric symptoms in addition. He confessed to having taken his usual 30 units of mixed insulin that morning, though in his apathy he did not mention the unusual extra dose which the HP gave him that evening. The comments of those called up to treat the hypoglycæmic convulsions at 3 A.M. temporarily flattened the HP, but the outcome left him on the pinnacle of success, for the morning found the patient pale, shaken and a little distrait, but in his right mind. Some days later a consulting physician came down to see a case suspected of being glandular fever. He is of the younger school, with a deliberate manner. Having given his opinion he said he felt himself a particular authority on glandular fever, since he was just recovering from it, and he proceeded to recount some of the more unpleasant symptoms.

Physician. "All the glands of the body tend to enlarge, including the epitrochlears."—HP. "Were your epitrochlears enlarged, Sir?"—Phys. "Yes, they were."—HP. "I thought they *only* enlarged in syphilis, Sir?"—Phys. "I can assure you they sometimes enlarge in other conditions as well, mine were enlarged, and I had glandular fever." Here the HP lapsed into silence, still looking unconvinced, but he brightened later and returned hopefully to the attack.

HP. "Did you say that the WR was sometimes positive in glandular fever, Sir?"—Phys. "I did."—HP. "Was your WR positive, Sir?"—Phys. "Sorry to disappoint you, Mr. Smith, but my WR was negative, and I did *not* have syphilis, but glandular fever."

Here I suggested moving on to another case.

* * *

SPORTSMAN'S LAMENT 1942

If I had plenty of time to spare
And petrol enough to get me there,
And if I could buy some cartridges
—Wouldn't I shoot some partridges!

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS, M.P.

THE debate on the coal situation and the demand for rationing have brought us up against one of the most difficult war-time problems for industry and one of the most uncomfortable problems for the ordinary citizen. There is a big deficit, Mr. Gwilym Lloyd George put it at 11 million tons, between production and consumption. It may be more. The Minister thinks that the gap can be bridged. But the House as a whole is sceptical. On output Mr. D. Grenfell, former Secretary for Mines, warned the Minister not to weigh his coal until it was in the bag.

From the point of view of the health, and convenience, of the country the Government did well to announce priority in distribution for the households taking about 1 cwt. a week. If this is maintained, and it depends *not only on general distribution but on local distribution* by retailers, some of the worst difficulties will be overcome. For nothing would be more disastrous than to subject the people of these islands in the fourth winter of war to an ordeal by cold. Mr. Grenfell said you could not make war with cold feet. What is equally important perhaps is that you cannot get good production on cold dinners and bad cooking. Nor can you maintain good health. These aspects of the matter are very much in the minds of members but received less attention in debate than the conditions in the coal industry itself on which so much depends. Major Lloyd George is a judicially minded man whose ambition it was said, before the war, was in the direction of the speakership of the House rather than that of minister. And it is perhaps lucky that what is one of the most difficult ministries has him at its head.

Whatever the decision of the Government may be, whether rationing is adopted or voluntary economy aided by slogans and reinforced by limiting orders, the coal industry itself is becoming more organised. Mr. Tom Smith, parliamentary secretary of the ministry gave a good deal of information about the new medical service. The present staff of one medical officer at the HQ of the ministry is to be increased by another nine, making ten in all of whom two will remain at HQ and eight posted to the coal-producing regions into which the country is divided. The duty of each regional MO will be to deal with medical services at the pits, away from the pits, and with the checking of medical certificates. The provision of first-aid organisation in the pits, and the provision of ambulances, is to be brought up to date. That the provision of these services still leaves some work to be done is a serious comment not only on the humanity but on the commonsense of colliery organisation. The prevention of occupational diseases and the promotion of physical fitness are other sides of the problem. Nystagmus is declining, largely, so the Parliamentary Secretary said, because there has been extra illumination. The provisions in operation in respect of silicosis are to be extended to conditions set up by other agents than silica and grouped under the term pneumokoniosis. In some pits there are more boils and carbuncles than in others and another industrial disease claiming attention is dermatitis. The regional MO will be expected to go down pits and investigate for himself and he looks like having plenty to do.

The regular inspection of juvenile workers is not proposed for the present, on account of shortage of staff, but a preliminary inspection on entry is to be the rule. Service away from the pits comprises panel treatment and hospital treatment both as in- and outpatients. The expenses of a miner attending for outpatient treatment, if sent by his doctor, are in future to be paid in full. A rehabilitation centre is being set up in Scotland and the Mansfield rehabilitation centre is accepted as a good type of institution. Certificates presented with an application to leave the industry on medical grounds will be lodged with the regional MO and arrangements made for checking the numbers and local origin of the certificates. Regions vary greatly in the numbers certificated under this head, but in one quarter there were just under 20,000 applications to leave the industry based on medical certificates. Absenteeism is to be treated, if it is found to depend on any medical disability, and to help with this the question of maintenance of the man and his family during treatment is being given careful consideration. Quite clearly the scope of the mining medical services is wide and difficult of exact definition at present. But miners are to be looked after as never before and the question of accidents considered as never before. The country is at last realising the value of its miners. Absenteeism is not a new problem and Mr Smith quoted from a Scottish Act of Parliament in 1641 as follows: "Coal hewers in Scotland doe ly from their worke at Pasch Yule Whitsunday and certain other tymes of the year which was of great offence to God and prejudice to the coal-master." We are beginning to get away from that attitude now—but perhaps because of our past indifference we shall be cold this winter.

* * *

To turn from the coal debate in the Commons to the debate in the Upper House on Lord Strabolgi's magazine article was to go from a grim battle-front to a panoplied display of dashing commando tactics. Lord Lovat, in uniform, spoke as if to his men. He called Strabolgi's criticisms bunkum and asked whether apprenticeship to the technical trade of soldiering was waste of time. "Tell that to the A E U," he said. He hotly resented the accusation that army officers were drawn from a class of British junkers. Strabolgi's reply showed that he wrote his article at the request of Quentin Reynolds to counter unfair criticism of the British Army in the U S A and quoted his first sentence: "Fundamentally nothing is wrong with the British Army." In withdrawing his motion for papers, which is the procedure in the Lords when a debate has achieved its purpose, Lovat said, "I have had great pleasure in crossing swords with Lord Strabolgi." And so a colourful debate ended with members of the Commons present considering that Lovat had done very well and Strabolgi put up a very good apologia. How unfortunate it is that no constitutional arrangement exists by which a brilliant soldier could come and talk to us in the House of Commons—although of course he could get elected—probably as "Independent."

QUESTION TIME

Food for Occupied Territories

Mr D M FOOT, parliamentary secretary to the Ministry of Economic Warfare, replying to Sir THOMAS MOORE, said: While exact statistics are not obtainable, I fear there can be no doubt that an abnormally high death-rate prevails among Greek children. It is a reasonable inference that this is partly due to scarcity of milk and fats. Before the war Greece was substantially self supporting in milk, and a very large exporter of olive oil. My information is that both these commodities have been requisitioned or otherwise acquired on a considerable scale by the occupying authorities, who must therefore be held responsible for the present acute shortage. The Swedish scheme for the importation and distribution of wheat from Canada has only been in operation for a short time. I cannot give any fresh undertaking as to the future, at least until the results of this experiment are known. Statements in the press that milk was available in South America and that it was impossible to get it to Greece owing to the refusal of navicerts by the British Government were misleading. He understood that the supplies of milk were not yet available and the Government had received no applications for navicerts.

In answer to a further question Mr FOOT said: While information about conditions in the Channel Islands is necessarily incomplete, the evidence available suggests that although there is a shortage of food in the islands by comparison with this country, and an almost total lack of certain particular products, the effect of the deficiencies has not been such as to impair the general health of the inhabitants.

Mr A EDEN, replying to Mr V BARTLETT, said: Recent reports show that while conditions in the internment camps in Hong Kong have to some extent improved since the early days, the general health of the internees has seriously suffered from lack of proper food and medicines. A sum of money has been allocated from official funds and has been transferred through the Swiss Government to the International Red Cross delegate at Hong-Kong. But owing to shortage of local supplies which can be purchased by the internees, only temporary relief can be afforded by this method. The Japanese authorities have refused to allow special relief ships for prisoners of war and interned civilians to be sent to Hong-Kong and other territory occupied by them; they have, however, agreed that food, clothing and medical comforts might be sent by the ships on which British and Japanese officials are being exchanged on their return voyage. This means that unless and until the Japanese Government alter their decision, the scale on which it is possible to send relief supplies is strictly limited. Full advantage was taken of the exchange ships and the total amount of the supplies shipped in them was about 4000 tons. Arrangements have been made for an equitable proportion of these supplies to be landed at Hong-Kong, and the first ship is due to reach Hong Kong within the next few days.

Scientific Advisory Committee

Mr IVOR THOMAS asked the Lord President of the Council who were the members of the Scientific Advisory Committee of the War Cabinet and what were the duties of this committee.—Sir JOHN ANDERSON replied: The scientific members of the committee are Sir Henry Dale, MD, PRS, Prof A V Hill, and Prof A C G Egerton (joint secretaries of the Royal Society), Sir Edward Appleton, secretary of the department of Scientific and Industrial Research, Sir Edward Mellanby, MD, secretary of the Medical Research Council, Prof W W C Topley, MD, secretary of the Agricultural Research Council. The functions of the committee are: to advise the Government on any scientific problems referred to it; to advise Government departments, when required, on the selection of individuals for particular lines of scientific inquiry or for membership of committees on which scientists are required; to bring to the notice of the Government promising new scientific or technical dvelopments which may be of importance to the war effort. Replying further to Mr THOMAS, Sir J ANDERSON said he had sometimes wished that departments would make more use of the services of this committee. It had been of great assistance to the Government as a whole and to departments.

Miners' Diseases

Mr JAMES GRIFFITHS asked the Minister of Fuel and Power whether the incidence of industrial diseases among coal miners was increasing and if he would give figures showing the increase in the number of cases of dermatitis and the reasons for the increase.—Major LLOYD GEORGE replied: There has been some increase in certain categories of disease and some decrease in others during recent years. For reasons which are at present obscure the number of cases of dermatitis among miners certified by examining surgeons for purposes of Workmen's Compensation has increased from 224 in 1937 to a provisional figure of 571 for 1941. As the problems of dermatitis also arise, and to a greater extent, in the case of factory workers, I am consulting with the Minister of Labour and National Service as to the best lines of investigating the matter more closely.—Mr GRIFFITHS: Will the Minister bear in mind that there is considerable opinion among the medical men who serve in the mining areas that this increase of dermatitis, which is very serious, is due to certain deficiencies in the diet, and will he have immediate inquiries made into that point?—Major LLOYD GEORGE: I have had inquiries made into one section of diet to which the hon. member has previously referred. He will not be surprised to hear that medical opinion is exactly the opposite. There has been an increase which has not been confined to the mining industry nor to the war years. I am making the most careful inquiries.

Midwives and Nurses

Mr E BEVIN informed Mr R DE LA BERE that he already had powers under the Defence (General) Regulations to direct midwives or nurses at present otherwise engaged into branches of the profession where there were shortages. He was in consultation with the Minister of Health on the general question of supply and employment of midwives and nurses.

Chiropodists in the Army

The Secretary of State for War informed Mr JOHN DUGDALE that, in view of experience which suggested that more skilled treatment might be desirable, he was now considering the attachment of fully qualified chiropodists to field medical units in the army.

VAD Committee

In reply to a question Sir J GRIGG stated: Arrangements for setting up a committee "to consider the scope and method of employment of Mobile Voluntary Aid Detachments by, and their relationship to, the Services ' have just been completed. Colonel W Elliot has agreed to be chairman , and a representative has been nominated by each of the three Service departments, the Ministry of Health the Ministry of Labour and National Service the British Red Cross Society, the Order of St John of Jerusalem and the Council of County Territorial Associations The chairman has suggested that Mrs J L Stocks, who was a member of the Committee on Amenities and Welfare in the Women's Services, should also serve

Medical Women Officers for WRNS

Sir ERNEST GRAHAM LITTLE asked the First Lord of the Admiralty whether he would consider the desirability of appointing medical women to serve in stations in naval commands as in other of the fighting services —Mr ALEXANDER replied It has already been decided to appoint a woman naval surgeon at one of the WRNS establishments and other appointments are under consideration

Air-raid Casualties

During the first three years of war 47,305 civilians were killed and 55,658 were injured and detained in hospital due to air raids on the United Kingdom - The figures for Greater London only included in these totals are 20,110 and 26 071 respectively (Mr H MORRISON in reply to Mr H BROOKE)

Addition of Calcium to Bread

Mr J H MARTIN asked the Parliamentary Secretary to the Ministry of Food whether in view of the diversity of medical opinion as to the effect of adding calcium to bread, he would consider offering two loaves to the public, one containing calcium and one without —Mr W MABANE replied My department is guided in all matters affecting medical questions and public health by the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council As this committee strongly advised that calcium should be added to all flour and that there should not be an alternative loaf containing no added calcium, the Minister sees no reason for adopting the suggestion

Diphtheria Immunisation

Mr BROWN, replying to a question, said The returns regarding diphtheria immunisation obtained from local authorities as a whole at Sept 30, 1941 showed that between Jan 1, 1940, and that date the number of notifications in England of diphtheria in children under the age of 15 was approximately 51,700, and that approximately 2380 of these children had received a course of immunisation. In the same period the total number of children immunised under local authority arrangements in England was approximately 1,889,000 By the end of June, 1942, this number had increased to close on 3 million

Insulin and Needles for Diabetics

Mr J J TINKER asked the Minister of Health if he was aware of the hardship caused to diabetic patients by the increased prices of insulin and needles which they must have , and if he would consider means to prevent these continued increased prices so as to place them within reach of all who needed them —Mr BROWN replied I am aware that prices have increased, but having regard to the free provision of insulin and the necessary appliances for administering it under the National Health Insurance and public-assistance schemes, I do not think that there is a case for any special measures to prevent any increases which may be warranted by the conditions of production.—Mr TINKER Could not something be done for people in need of insulin outside the societies mentioned ?—Mr BROWN I understand that Mr G Griffiths has been discussing the matter with the Parliamentary Secretary —Mr GRIFFITHS Does the Minister know that the discussion has failed badly, and is it not time that the Minister did something for people suffering from diabetes ? There is a person in my division taking 90 units a day, and she cannot get a penny piece I hope the Minister will rise to the occasion. If he subsidises the price of insulin that will do something towards it —Mr BROWN That is a point that we are looking at now —Mr GRIFFITHS I want the Minister to do it, and not to look at it

Medical Schools Committee

Mr BROWN informed Sir ERNEST GRAHAM-LITTLE that the universities and medical licensing bodies were not consulted as to its composition and subjects of inquiry before the interdepartmental committee on medical schools was formed.

Letters to the Editor

TIME OF UNION IN FRACTURED TIBIA

SIR,—The article by Burns and Young in the *Lancet* of Sept 12 brings before us again the necessity for defining what we mean by union and when we are entitled to say that union has taken place in x weeks or y months Burns and Young do clarify this quotient but I still feel that " union " is a loosely applied term In their recent textbooks on fractures neither Watson-Jones nor Perkins sets down any criteria on which to form the opinion that any particular fracture has united at any given time Perkins writes " Experience tells us that a fracture will unite and consolidate in a certain time (See page 23 for time-tables) " This is hardly a clinical or physiological definition Surely if we are to form comparisons we must have some standard from which to assess when union has occurred Otherwise a fracture which one surgeon would consider united might be deemed not fully united by another I suggest some such classification as the following

Signs of union may be (*a*) clinical, (*b*) radiological

Clinical—Rigidity of the fragments after x weeks Loss of tenderness on percussion No tendency to angulate under strain in use

Radiological—Callus Well calcified Fracture Line Disappearance of, Growth of trabeculæ across

Bone Substance Changes in

1 Callus
   Absorption of excess
   Moulding of by the periosteum
2 Osteoid tissue
   Osteogenesis of endosteal callus
   Disappearance of the osteoporosis of the bone ends at the site of fracture
3 Bone Restoration of the normal density, structure and detail at the site of fracture and for a short distance above and below

Some standard on these lines would render comparison of surgeons' tables on union more equitable

Harley Street, W 1   G O TIPPETT

SIR,—Some of the facets of the problem of the rate of union of the fractured tibia presented by Burns and Young in your issue of Sept 12, and more critically illuminated by your annotation on the subject, prompt me to try and add a few more, as the subject still seems to be exciting interest

In 1840, talking of fractures of both bones of the leg, Malgaigne says, " The callus forms in thirty five to forty days, and we may take off the apparatus, and let the patient move his leg in bed without any inconvenience resulting "[1] In 1860, Hamilton in America states, " The average period of perfect union in 29 cases, including those in which union was delayed by extraordinary causes beyond the normal time, was forty days , the general average under ordinary circumstances may be stated at about thirty days "[2] In 1750 Heister gives thirty to fifty days as the period of union,[3] and this period seems to be the generally accepted one at least till 1900, when an inquiry was circulated among British hospitals by the BMA and produced substantially similar figures[4]

After this period, among a multiplicity of authors, the period lengthens to " five to eight " weeks Thus Matti in 1931 states, " Solid healing of fractures of the shafts of both leg bones takes five to eight weeks , it occurs more quickly the younger the patient and the better the position of the fragments Transverse fractures heal more slowly than oblique, apparently because the callus forming zone is less disturbed "[5] In 1938 Böhler states, " Fractures with little displacement heal in eight weeks, but with greater displacement take ten to twelve weeks "[6] This is the figure I obtained in uncomplicated cases in a fracture clinic before the war

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[1] Malgaigne, J F Treatise on Fractures, Packard s Translation, 1858 p 635
[2] Hamilton F H Practical Treatise on Fractures and Dislocations, Philadelphia 1860
[3] Heister, L General System of Surgery, London, 1750, p 106
[4] Bennett W H *Brit med J* 1900, ii.
[5] Matti, H Knochenbrüche, Berlin 1931 p 828
[6] Böhler L Die Behandlung der Frakturen, Vienna, 1938, vol 2, p 1194

We are thus prompted to ask what has caused the delay from consolidation in six weeks to consolidation in eleven weeks, between 1840 and 1940? In my opinion it is chiefly due to the use of X rays for the diagnosis of union If a series of cases is taken, and the time of clinical union tested against the time for radiological union, a period of five weeks will be found on the average to have elapsed With the advent of X rays as a criterion of union (and this did not become of value or was generally employed till after 1920) we started to be more careful in letting our patients up, with apparent slowing in the rate of union I think the first conclusion we must draw is that we should rely more on clinical evidence of consolidation A second factor is undoubtedly the greater use of plaster, for, if the splint cannot be frequently removed to estimate union, it tends to stay on longer than necessary, and the average figures rise I am not convinced that delay is any more than reflexion of these facts; in a recent small series of military cases of a similar type to Burns and Young's later group, I find union to have averaged eleven weeks

The comparison of such statistics is however rendered rather valueless by a lack of agreement as to what constitutes a legitimate complication delaying union Like Burns and Young, I have noted the delay when there was an accompanying fracture of the femur, but no mention was made in their paper of the effect of the double spiral, or double oblique fracture which separates a triangle of bone, and in my experience slows down the period of union by five to seven weeks The importance of local skin infection, apart from actual infection of the bone, was not mentioned, and many cases nowadays have burns or abrasions together with their fracture Nor is the statement "apposition approximately equal" a sufficient yardstick for comparison, as the displacement before reduction is surely, from this point of view, as important as the position after reduction, and may well determine when a plaster may be applied In short, I feel that the rate of union of fractures has remained unaltered, and that if we are keeping our cases longer in hospital it is due to a higher incidence of complicated fractures—if we exclude maltreatment, and with Burns and Young I am in hearty agreement about the danger of overtraction and prolonged traction in causing delay

As a last point it is interesting to note that the protagonists of absolute immobilisation are the protagonists of early walking plasters I find it impossible to believe that any plaster, however skilfully applied, totally abolishes movement at the fracture site, and I think the case for slight movement at the fracture site hastening union, provided it does not produce a shearing strain, can be readily defended Within the last few months I have found it necessary to remove several plasters for skin conditions, and leave them off till they were cleared up I have been surprised in three of these cases to find the incomplete union rapidly become complete, instead of becoming increasingly unstable Possibly others have had a similar experience

Newmarket J GRANT BONNIN

STAPHYLOCOCCAL NURSERY

SIR,—I am prompted by your leading article of Sept 26 to record some hitherto unpublished observations of my own During a 3 months' bacteriological survey of the nursery in a large London hospital I examined nasal swabs from 93 infants between five and seven days old 90 (97%) were carriers of coagulase-positive staphylococci This survey was undertaken during the period of heavy enemy air attacks in the winter of 1941 and the nursery was for this reason situated in the basement of the hospital It was not understaffed or overcrowded but there was no direct ventilation During the period under review there were amongst these 93 infants 22 cases of mild clinical infection, "sticky eyes" and skin lesions of various kinds, attributed to staphylococcal infection, these organisms being recovered in profuse culture from all the lesions examined The staphylococci from the first five "sticky eyes" were examined by Dr E H Gillespie and all were found to belong to Cowan's type 1 No attempt was made to type the staphylococci from the remaining cases As a control to these observations (and through the kindness of Mr Eardley Holland) I took nasal swabs from 32 infants in three emergency maternity homes situated in the country Of these children, who were in a similar age-group to the London children, only 11 (34%) were found to be nasal carriers of coagulase-positive staphylococci In none of these three homes had there been recent outbreaks of staphylococcal infection

The number of children examined in the country homes is admittedly too small for the results to bear statistical analysis, but superficially there appears to be a marked discrepancy between the two groups, town and country It seems possible that the high carrier-rate obtaining in the town group, which is in accord with the observations of other workers in this field, may have been associated with the local conditions under which the infants were living, the degree of dust pollution of the atmosphere and the prevalence of staphylococcal infections in their immediate environment A staphylococcal outbreak certainly appeared to be in progress during the period of the survey

One further observation made during this survey seems worthy of note Swabs were taken from the eyelids of 45 normal infants in the London nursery 25 (56%) yielded coagulase-positive staphylococci in profuse culture In view of this high carrier-rate it seems that, in the absence of more conclusive evidence, the staphylococcal ætiology of "sticky eye" should be accepted with reserve Where serological methods have established the identity of staphylococci from consecutive cases of pemphigus neonatorum[1] there seems less reason for doubting their causal relationship although even then the evidence is not conclusive With the possible exception of the 5 cases mentioned above where type 1 staphylococci were recovered in profuse culture from 5 consecutive eye infections, the serological method of approach does not yet appear to have been applied to the epidemiology of "sticky eye"

London, W 6 S D ELLIOTT

MEDICAL PLANNING

SIR,—Your report on the BMA representative meeting was illuminating It seems hardly credible that the proposals to await the opinions of the men on service could be turned down and that so close a vote on the no income limit should be considered representative of the profession Truly the spirit of totalitarianism seems abroad in the land Certain members urged that the feelings of those who did not agree with group medicine and health centres should be disregarded, and that "one street one doctor" should be the rule This is indeed a portent of our fate under even the semi-state service of the Planning Commission scheme What mandate has the BMA to abolish private practice? Why forestall a hypothetical government-imposed scheme by running our own heads into the noose? At all costs let us preserve our freedom Our patients prefer to see us in our own homes; when they need specialist services they can be referred to a hospital, often by appointment The scheme is un-English and uproots the traditions of medical practice of which the new President speaks so highly

Gloucester Gate, N W 1 RUSSELL STEELE

CONSIDERATE TONSILLECTOMY

SIR,—Mr Gerrie and Dr Ross Mackenzie are entitled to the last word, but I want to ask them one question Do they agree with the ideals they mention, or do they use the word to suggest the unattainable? If the former, their hospital and its system must conform to what they believe to be the best for their little patients or become a picturesque backwater in the medicine of the past If the latter, let them take courage, and they will find that ideals are attainable These are not merely mine, they are developments from great teachers—Mr F J Steward and Sir William Milligan They have therefore stood the test of nearly 50 years and have the support of leaders of thought in our profession—of physicians, especially when they specialise in diseases of the chest, of administrators in the educational and public health services, and of general practitioners old enough to be seeing into the world children whose parents and grandparents they have saved from tonsillectomy without harm To follow these ideals leads one to apply consideration to the indications for as well as to the technique of tonsillectomy It was Mr

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[1] Elliott, S D, Gillespie, E H and Holland, E Lancet 1941, i, 169

Steward who, when shutting down tonsil and adenoid operations for the winter, once said that one advantage of doing so was that by the spring you had learnt how many of them were unnecessary Children's hospitals seem not to be conducive to the conservation of the subepithelial lymphatic glands, perhaps because those who work in them see their little patients for so short a period of their lives instead of from eight months to eighty years as others do, but anyone incurs a grave responsibility today who, unless the indications are overwhelming, advises the removal of this protective tissue before the child has withstood the increased droplet infection of the first few years of school life

It is sad to relate that Professor Digby, who by his book *Immunity and Health* (1919) did more than anyone to impress this idea upon the profession, has not been heard of since the fall of Hong-Kong

Guy's Hospital T. B LAYTON

CERTIFICATION OF DEATH IN INFANCY

SIR,—I would like to make one or two observations on Dr Miller's conclusions in his article of Sept 5 Under existing conditions in private practice when a doctor is unable to certify a cause of death he has to notify the coroner The latter is merely concerned to know whether the death is due to unnatural causes and will often, dispense with an autopsy if the facts of the case do not lead him to suspect foul play Lay people often regard an inquest as carrying a stigma and the family doctor, out of regard to the family, is tempted to sign the death certificate on the flimsiest data This state of affairs could be improved by increasing the facilities for post-mortems to be done at the practitioner's request by the provision of large well-equipped public mortuaries with a staff of competent pathologists At the same time an attempt should be made by means of intelligent propaganda to overcome the prevalent lay prejudice against the necropsy. Further liaison between clinical pathological services and the practitioner would be an enormous advantage There should be a staff of technicians to visit the sick baby's home for the purpose of taking blood-counts, blood-films, &c at the practitioner's request. The doctor usually has neither the time nor the special experience required Such facilities do exist but are not sufficiently comprehensive, and in many cases the cost is prohibitive These two provisions would add enormously to our knowledge of pædiatrics, because the greater proportion of childhood ailments have to be treated by the private general practitioner who often has to struggle on without the tools of modern medicine

Newcastle-on Tyne SIDNEY WOOLF

INOPERABLE GASTRIC CANCER

SIR,—I was most interested to read Major Raven's review, in your issue of Sept 19, of the results obtained by the treatment of inoperable carcinoma of the stomach by radon seed implantation Out of five cases I have treated by a combination of gastrojejunostomy and radon implantation one case seems worth recording because of the remarkable improvement in general condition and prolongation of life beyond the usual expectancy This patient was 58 years of age, with an inoperable pyloric carcinoma Following the operation considerable improvement in health was apparent, although convalescence was at first somewhat delayed by wound infection He put on nearly a stone in weight after leaving hospital and surprised me three months later by telling me that he had gone back to work When he was seen fourteen months after his operation he was still doing light work and was without symptoms At that time a barium meal showed the same original deformity at the pyloric end of the stomach

Gidea Park. D LANG STEVENSON

ANÆMIA IN PREGNANCY

SIR,—Your leading article (Sept 19, p 337) brings together forcibly the present views of some workers upon the blood condition of antenatal cases While macrocytic anæmias are comparatively rare the microcytic type appears to be increasing both in these women and in the community at large The article suggests that iron in absorbable form should be widely provided but states that the "fortified milk scheme" *would be difficult to carry out* It would however, be possible to fortify the bread (though previous discussions in the *Lancet* and the *British Medical Journal* make me hesitate to suggest any further modification of this essential food!) Fortification with iron phytate, sodium ferric pyrophosphate and ferrum redactum was, however, satisfactorily carried out in the United States before the war, so that the practicability of the method has been established (Council on Foods and Nutrition, *J Amer med Ass* 1941, 116, 2819, *Ibid* 1941, 117 300) There appears to be some disagreement as to the efficacy of the iron compounds then used (Free, A and Bing, F *Nutrition*, 1940, 19, 449, Widdowson, E M *Nature, Lond* 1941, 148, 219, Widdowson, E M and McCance R A *Lancet*, 1942, i, 588), but further experimental work might well provide a more satisfactory form in which to introduce iron into bread Critics may contend that everyone does not require extra iron, but these I would ask whether harm from increased iron intake has ever been proved, while to the large proportion of the population who are now iron deficient the effects would be extremely beneficial

Farnborough, Kent HELEN P. WRIGHT.

PLANNED NUTRITION

SIR —The recent drive for the formation of a Nutrition Council, primarily planned for the benefit of the Ministry of Food, ignores the history of that ministry in its relations to scientific advisers It is clearly futile to establish yet another advisory committee, no doubt with an expensive secretariat, personnel, officers, and so forth unless there is some probability that its advice will be taken by the ministry for whom it is mainly provided The history of the Ministry of Food in this respect gives little encouragement to this expectation Experience of the past three years has in fact demonstrated that multiplication of committees has provided a convenient smoke-screen for ministries, behind which they pursue, undisturbed, policies often having no scientific sanction and principally dictated by the permanent staffs of individual departments

House of Commons E GRAHAM-LITTLE.

ANÆSTHETIC MORTALITY

SIR,—I should like to support Dr Rawdon Smith in stressing the imperative necessity of recording anæsthetic fatalities I am afraid there can be no doubt that we have been grievously misled about the safety of some of the newer anæsthetic agents During the past twenty years I have worked frequently at a number of suburban and provincial hospitals, where most of the anæsthetics are given by general practitioners, who use chloroform freely and openly. In all this time I have never seen a chloroform death and I have never heard of a chloroform death occurring at these hospitals With spinal, intravenous and local anæsthesia, this is not the case There have been in my own district a number of fatalities from these newer anæsthetic agents, not one of which has been reported in the medical press We can only make an actuarial estimation of anæsthetic risks from a study of anæsthetic fatalities, and unless these fatalities are published we are completely at sea

New Barnet. JOHN ELAM

LIAISON

SIR,—While the difficulties in establishing liaison between the Civil Defence, the Home Guard, and the RAMC as outlined by Z M A. are no doubt true for many localities, it would be erroneous for your readers to suppose that they are true universally Here in Ramsgate we have established at least the beginnings of satisfactory cooperation and have held exercises to try out our organisation I will not claim that we have solved many of our problems, but at least we are beginning to see precisely what they are—which is the first essential step towards solving them Your correspondent's difficulty with the Civil Defence authorities, when he was told that there was no order in the civil defence service touching the matter of liaison with the Home Guard, seems inexplicable, for there is in existence a Ministry of Health circular (No 2486) dated Sept 12, 1941 which deals with this matter It is in fact, for a circular reasonably clear and certainly provides the basis upon which a scheme may be built

Ramsgate J V WALKER,
Medical Officer of Health

Obituary

HEDLEY DUNCAN WRIGHT

B A TASMANIA, M D, D SC EDIN, M R C P E

Hedley Wright came to this country from his native Tasmania in 1910, and while still an undergraduate at Edinburgh he went to Serbia as a dresser in the Scottish Red Cross unit during the second Balkan war As soon as he graduated with first-class honours in 1916 he obtained a commission in the RAMC and served in France, India, Baluchistan and Persia before he returned to civilian life in 1920 Wright's career as a bacteriologist was started auspiciously under James Ritchie in his own university and continued, under A G McKendrick, as assistant superintendent of the research laboratory of the Royal College of Physicians of Edinburgh By McKendrick he was initiated into the mysteries of statistical analysis as applied to biological problems, a discipline which was later to stand him in good stead, and he always spoke of that association as one of the happiest and most fruitful in his life But it was as lecturer, and later reader, in bacteriology at University College Hospital medical school under A E Boycott that Wright really began to show his outstanding qualities as a bacteriologist Here he carried out over a number of years his important investigations into the bacteriological and immunological aspects, clinical and experimental, of bacterial endocarditis, pneumococcal septicæmia, puerperal sepsis and other forms of bacteræmia From these studies he was led to a reinvestigation of the subject of nutrient media, with particular reference to the production of an optimum medium for the cultivation of the pneumococcus and related organisms

In 1930 Wright was appointed to the newly instituted chair of bacteriology in the University of Sydney, which he occupied with great distinction With a big new teaching department to organise he had less time for original research, but he was able to continue his studies into the fundamental nutritional requirements of bacteria cultivated in vitro, and he set a fine standard of work for those who were to follow him With his translation to Liverpool in 1934, new fields of inquiry presented themselves, particularly in relation to epidemiology and public health His studies ranged over such practically important subjects as the bacteriology of water-supplies and of pasteurised milk, the laboratory diagnosis of diphtheria, cross-infection in diphtheria wards and the occurrence of diphtheria bacilli in ward dust Most of these studies were made in collaboration with his colleagues Shone, Tucker, Glass and Holt He also made fruitful use of an opportunity which presented itself to investigate an epidemic of paratyphoid fever, and he played a considerable part in the establishment of the Emergency Public Health Service His last contribution, a note of warning as to the possibility of occurrence of diphtheria in inoculated persons, appeared only a month before his death

He was a member of the bacteriological committee of the Medical Research Council and of its subcommittees on cross-infection in hospitals and on diphtheria immunisation He was a fine committee man, wise, blunt in speech, a hard hitter, never allowing himself to be ruffled He also sat on the research advisory committee of the Development Commission and of the University of London committee for making appointments to chairs and readerships in pathology, while in the senate of the University of Liverpool lay members of other faculties listened to his counsel and opinions with more appreciation than those of any other member of the faculty of medicine

Wright has described himself as " a real cricket fan ", and he had played first-class cricket both in Tasmania and in Edinburgh At University College, in later years, he used often to be the far from forlorn hope of his sid in the staff *v* students' match

During 1928–30 and again from 1937 until his deat he had been an assistant editor of the *Journal of Pathology and Bacteriology* and Prof Matthew Stewart, to whom we are indebted for much of the material for this memoir writes " He was an ideal editorial colleague, expeditious business-like and constructively critical His own writings were models of lucidity, and many are gratefu for the help he gave them in the preparation of their papers for the press An upright and fearless man Wright was a fighter where he considered fi necessary, and an indefatigable worker Scholarly thoughtful and philosophical, he had read widely many branches of literature and he was a charmin companion and good conversationalist He had achieve much in his all too short life and he had made many friends by whom he will be remembered as one of truest and best "

Wright's end was clouded by tragedy He had had major operation in January, 1939, from which he made good recovery, but towards the end of last year he bega to go downhill A second operation early this year ga him relief, but did not bring the hoped-for in his general state During the summer term he on going down to his laboratory to give his usual lectures though this greatly exhausted him, and his deteriorated rapidly In July his wife, whose health ha already given cause for anxiety, had a stroke of whic she died a fortnight later And after weeks of physical distress borne with heroic fortitude Wrigh himself died on Sept 9 Of their three sons the el has just taken his degree in chemistry at Liverpool, th second is serving in the Merchant Navy and the third the Royal Navy

ROBERT CECIL ROBERTSON

M C, M D GLASG, F R F P S, M R C P E, D P H

THE news of Cecil Robertson's death at Hong-Kc on Aug 4 will come as a shock to his friends in th country Robertson was not only a brilliant bacterio gist, but he was a born artist With no instruction, save a few hints from his gifted wife, he painted pictures which were accepted by the Royal Academy His wa a robust personality, capable and versatile As soon he saw that a thing wanted doing he set to work did it His organising power was remarkable and leadership inspiring It was my good fortune to be of his colleagues in the Henry Lester Institute of Medical Research, Shanghai, and I well remember his coming to my department and saying, " Here is the Yangtze out of hand, one of the greatest floods in history, what are we going to do about it ? " At once he took the lead One of the Moller line steamers was chartered, partitions torn out, staircases put in and an oldish cargo boat transformed into a hospital ship

Inspired by his drive and leadership, various Chinese and foreign members of the staff of the institute offered their services and within a matter of days he was on his way up the Yangtze to Hankow, combining an errand of mercy with a full-scale investigation of th ætiology and treatment of the diseases which develop side by side with flood conditions

Most of Robertson's colleagues in the Henry Lester Institute were, of course, Chinese, and his devotion to them drew out a like devotion on their part to him, so that he developed a splendid team spirit in his division One day in Shanghai he was taking a small Chinese boy, the son of one of his servants, in his car to have an inoculation when it was seized by armed gangsters His chauffeur was bundled out and the car driven along one of the unfrequented roads on the outskirts of the settlement Robertson realised that he and the boy were being kidnapped Wrapping his great coat round the frightened Chinese boy and holding him snugly to himself, he quietly opened the door and rolled out Before the miscreants could recover from their surprise he had picked up the boy and disappeared among the bushes, making his way to safety

It was no cause for wonder to us who knew him that in August 1937, when Shanghai became involved in the Sino-Japanese war, Robertson at once offered his services to the municipal health department and organised a large part of its relief and refugee work, using the opportunity to investigate deficiency diseases. Or that in 1939, when the League of Nations wanted a commissioner to take charge of the British anti-epidemic unit in China, they invited Robertson to take the lead. With his team of workers he made a splendid epidemiological survey of Southern and Western Yunnan.

To Robertson the need of the sick and suffering was always a call along two lines—to bring relief and to investigate the cause so as to prevent a recurrence. And now he has gone from us and the world is poorer for his passing. To his wife and daughter, who escaped from Shanghai just before the invasion, we tender our respectful sympathy.

H G T

Robertson, who was 52 years of age, graduated from the University of Glasgow in 1911, and for his service with the RAMC during the last war was awarded the MC. On his return he continued for a time to work in the vaccine department of the RAM college, before becoming assistant bacteriologist to the corporations of Bradford and Glasgow in turn. Later he was pathologist to the Ministry of Pensions Hospital at Bellahouston. Much of his work in China was done at the Lester Institute at Shanghai, and it was only in 1940 that he took up his chair in Hong-Kong.

HEINZ LOTHAR MEYERHOF

MD MILAN

Dr Heinz Meyerhof died suddenly at Sherbrooke, Canada, at the early age of 27. Born in Berlin, he spent his youth there and began his medical studies in the university, but he left Germany in 1933 to continue his studies in Milan, where he graduated in 1938 with first-class honours in medicine and surgery. In Italy he supported himself entirely by means of commercial drawings. He undertook research work on the chemotherapy of spirochætosis in the Serological Institute at Milan, and later collaborated with Professor Zirconi in an investigation on the action of embryonic extracts on the sex organs. This work was published in the *Journal of Physiology* in 1940, and was followed by a short paper by Meyerhof himself on lymphocytosis induced by extracts from lymph nodes, a subject on which his MD thesis had been based.

Early in 1939 Meyerhof was forced to leave Italy, and he came to England to continue his investigations in the Department of Pathology in Cambridge, working with a grant from the Society for the Protection of Science and Learning. He was classified by a Home Office Tribunal in October, 1939, as a "refugee from Nazi oppression." In May, 1940, he was interned, being an alien resident in a protected area, but was released in January 1941, and went to Canada where his lectures in medicine and bacteriology were greatly appreciated. His sudden death ended a promising life. Meyerhof possessed a strong artistic vein; and those with whom he came into contact will remember him for the courage with which he cheerfully overcame the many difficulties encountered in his career and for his goodness of heart and happy comradeship.

First Aid Diagrams.—Messrs Adam Rouilly & Co have produced two new wall charts for first aid instruction. One, roughly a yard square, shows 12 fractures, the other, about half that size, shows 4 dislocations. The original drawings are by W J Pardoe, made under the supervision of Professor Smout of Birmingham. The drawings are semi diagrammatic, and contain no needless detail to confuse the student. They are, however, sufficiently pictorial to make the nature of the injuries clear to the back benches and somewhat exaggerated colour is used with effect.

Nutrition Society.—A whole day conference of this society will be held at the London School of Hygiene, Keppel Street, London, W C 1, on Saturday, Oct 17, at 11 AM, to discuss trace elements in relation to health. The chair will be taken at the morning session by Mr J Russell Greig, PH D, and at the afternoon session by Prof C R Harington. Further details from the hon secretary, Mr Leslie Harris, D SC, Dunn Nutritional Laboratory, Cambridge.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

Notes and News

MINIATURE MASS RADIOGRAPHY

At a meeting of the Joint Tuberculosis Council held on Sept 19 Dr G. Jessel presented a careful report by the radiology committee which was adopted. During the discussion emphasis was laid by Dr R A Young on the necessity for regarding X-ray examination as an integral part of medical examination as a whole; it was most undesirable that one negative radiogram should be regarded as proof of immunity from tuberculosis for all time. The council thought it impossible as yet to estimate with any degree of accuracy the number of beds which should be available for new cases discovered by mass investigation. There was some difference of opinion about who should interpret the small films, one of a panel of clinicians or a radiographer. Common ground was found in all the following propositions. Mass radiography should be treated as part of a general health survey and not related in the public mind specifically with tuberculosis. It would neither be desirable nor generally possible for mass radiography to be carried out at existing tuberculosis dispensaries, but tuberculosis officers should take an active part in reading the films and investigating the suspects. A central committee approved by the Ministry of Health with a medical advisor should be established to coordinate and supervise mass radiography. Sets should be lent to selected county and county borough councils after an approved scheme has been submitted by the medical officer of health and tuberculosis officer. They should be set up in centres convenient to large numbers of workpeople and moved to other premises from time to time for the examination of further batches. Groups for examination might include (1) Government and local government staffs, civil defence personnel, post office employees, police, fire brigade, and so on; (2) Workers in munition works and other industries, particularly those known to provide an undue proportion of cases of tuberculosis; (3) Secondary school leavers. Special attention should be given to age-groups 16–30 years. The staff employed in mass radiography should receive some central training. The small films would be read by one of a panel of clinicians, including the local tuberculosis officer and radiologist. Suspicious films should lead to a full-size radiogram being taken. This, if suspicious, would in turn lead to a full investigation at the local tuberculosis dispensary or general hospital. Permission was given by the Council for the report to be used for propaganda purposes in the scheme about to be launched.

THE FRENCH AND BELGIAN WAY

The Belgian review *Message* is still a young journal not yet out of its first year. Among English and French articles of general interest, the August issue contains an account[1] of the Centre de Rééducation at Finedon, Northants, where men leaving the Services are refitted to earn their livelihoods. The centre is sponsored and largely financed by General de Gaulle, but it is helped too by other friends and by numerous gifts and subscriptions. It differs strikingly from its English counterparts in being run jointly by an artist and a scientist. Joseph Lacasse, the artist, is a Belgian; Colonel Baranger is French. They are old friends and have worked together in France before the war, to provide work and opportunities for struggling artists. At Finedon Hall something of the freedom of an atelier has been created even on our unpromising British soil. Newcomers are not pressed to take up any special form of work; they wander round and see what is being done, try their hand at this or that, and gradually become absorbed by some art or trade, until they are working hard at it from choice. Thus a man who began as a carpenter is now one of the most promising artists in Lacasse's studio. Craftsmen can take up their old trades or try new ones. The care of the house is in the hands of the residents: they began by piping their own water-supply; they replace crumbling stone and are providing a summer room with window frames and glass against the English winter. Bricklayers and carpenters thus find work ready to their hand; blacksmiths and metal workers can use the forge, potters and shoemakers find the materials of their craft waiting for them, a printing press is being installed, and fabrics are woven In the Victorian-Gothic tower Colonel Baranger and his assistants have their laboratories, and some patients discover a liking for work at the bench or undertake care of the animals Dress is according to taste, and everyone smokes anywhere he pleases This wholesome lack of useless restrictions is something of a lesion for us, who still lurk in a cocoon of red tape

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[1] Orchard, V *Message*, August 1942, p 30

LCC AND PREMEDICAL STUDY

The Interdepartmental Committee on Medical Schools have asked the London County Council for their views on medical education The only aspects of the subject which the council think directly concern them as a local education authority are the facilities available for medical students in their preregistration period and the scholarships and exhibitions which can be given to students who need help The council are of the opinion that the proper place for the study of the preregistration subjects is the secondary school and not the medical school and that their study should be increased The county scholarships and exhibitions are not limited in number and all students who secure the required academic qualification are eligible The scholarships are tenable in London or in the Provinces, but there is evidence that London students, both men and women, are finding it difficult owing to the increased number of applications to obtain admission to medical schools in London The council further state that any arrangements which they might make to further medical education would, of course, be open equally to both men and women, and they would expect to be treated financially by the Government not less favourably than the voluntary teaching hospitals and medical schools.

London Voluntary Hospitals

The 162 voluntary hospitals within metropolitan London have now 22,400 beds, where during 1941 over 1,300,000 patients were treated at a cost of over £4 million These figures include the 1,214,000 outpatients who made over 5,500,000 attendances at the hospitals The 39th annual statistical report of King Edward's Hospitals Fund for London, which has just been published, shows also that there were ample funds to meet the expenses of this service Income was £4,299,000, or £216,485 more than was needed to balance the maintenance budget In addition, £429,376 was received as free legacies, which brought the surplus up to £654 821 The report is limited to the hospitals operating within the metropolitan police area, and takes no account of beds provided and staffed by London voluntary hospitals outside this area under the Emergency Medical Service

Royal Society of Medicine

During the coming week four presidential addresses will be given at this society On Tuesday, Oct 13, at 2 30 PM, at the section of psychiatry, Dr John Brander will speak on medical and social implications of psychological medicine, on Oct 14, at 4 30 PM, at the section of physical medicine, Dr Philippe Bauwens will speak on physical medicine and planning for the future, on Oct 15 at 4 30 PM, at the section of neurology, Dr R Mackenzie Stewart will speak on the pathology of cerebral diplegia, and on Oct 16, at 4 PM, at the section of radiology Dr F M Allchin will speak on radiography as the handmaiden of radiotherapy On Oct 16, at 3 30 PM, the section of obstetrics and gynæcology will also meet, when Prof Dugald Baird and Prof Charles McNeil will open a discussion on stillbirth and neonatal mortality

Faculty of Radiologists

A meeting of the therapy section of the faculty will be held at 10 AM, on Saturday, Oct 17, at 32, Welbeck Street, London, W 1, when Dr F Ellis, Mr C W Wilson and Dr J L Dobbie will open a discussion on beam direction in radiotherapy

Association of Scientific Workers

On Sunday, Oct 18, this association will hold a conference at Cardiff on science for victory Speakers will include Dr F H Tyrer and Dr J Greenwood Wilson Further information may be had from the Conference Secretary, 130, Cardiff Road, Llandaff, Glam

Infectious Disease in England and Wales

WEEK ENDED SEPT 26

Notifications —The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever, 1963, whooping-cough, 938, diphtheria, 807, paratyphoid, 13, typhoid, 9, measles (excluding rubella), 3356, pneumonia (primary or influenzal), 459, puerperal pyrexia, 161, cerebrospinal fever, 70, polio myelitis, 32, polio-encephalitis, 7; encephalitis lethargica, 2, dysentery, 237, ophthalmia neonatorum, 112 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Sept 23 was 1497, including scarlet fever, 415, diphtheria, 177, measles, 172, whooping cough, 218, enteritis, 71, chicken-pox, 49, erysipelas, 37, mumps, 42, poliomyelitis, 7, dysentery, 29, cerebrospinal fever, 5, puerperal sepsis, 26, enteric fever, 12, german measles, 1, continued fever 6, other diseases (non-infectious), 125, not yet diagnosed, 95

Deaths —In 126 great towns there were no deaths from scarlet fever or the enteric fevers, 2 (0) from measles, 13 (2) from whooping-cough, 21 (0) from diphtheria, 70 (10) from diarrhœa and enteritis under two years, and 6 (0) *from influenza The figures in parentheses are* those for London itself

Manchester reported 8 deaths from diarrhœa, Liverpool 7, no other great town more than 3

The number of stillbirths notified during the week was 223 (corresponding to a rate of 36 per thousand total births), including 23 in London

Births, Marriages and Deaths

BIRTHS

Bell Tawse —On Sept 28, at Southborough, the wife of Dr Alan Bell Tawse, RAFVR—a daughter

Chapman —On Sept 30, at Edenbridge, the wife of Surgeon Commander W Rougier Chapman, RNVR—a daughter

Crisp —On Sept 29, at Chorley, the wife of Captain W J C Crisp, FRCS, RAMC—a son

Edward —On Sept 28, at Cardiff, the wife of Dr D G ff Edward—a son

Hambly —On Sept 28, at Seer Green, Bucks, to Dr Elizabeth Hambly (née Cadbury), the wife of Mr Edmund Hambly, FRCS—a son

Lock —On Sept 25, at Guildford, the wife of Surgeon Lieutenant J A N Lock, RNVR—a son

Pollard —On Sept 26, in Oxford, the wife of Captain Graham Pollard RAMC—a son

Wheatley-Levitt —On Sept 27, in Aberdeen, the wife of Surgeon Lieutenant C Wheatley-Levitt, RNVR—a daughter

Wise —On Sept 26, at Adlington Hall, Cheshire, the wife of Lieutenant Lionel Wise, RAMC—a daughter

MARRIAGES

Caldwell—Deakin —On Sept 29 at Ewell, Surrey, David Laurie Caldwell, MRCP, to Ann Gilian Deakin

Hickinbotham—Cadbury —On Sept 26, at Birmingham, Paul Frederick John Hickinbotham, FRCS, lieutenant RAMC, to Catherine Rachel Cadbury

Lambert—Pledger —On Sept 26 at Easthampstead John Lambert MD, of Wellington College, to Vera V Pledger, of Peterborough

Pinniger—Pratt —On Sept 8, at Hoyland Yorks, John Lawrence *Pinniger* MRCP *to Katharine Mary Pratt*

Schott—Loewi —On Sept 28, in London, Adolf Schott, MD, of Harley Street, to Erica Loewi

DEATHS

Andrew —On Sept 27, at Hendon, Francis William Andrew, MRCS, aged 75

Bateman —On Sept 25, at Bexhill on Sea, Charles Edward Gooderson Bateman, LRCPF, aged 79

Carr —On Sept 29, John Walter Carr, CBE, MD LOND, FRCP, FRCS, aged 80

Diggle —On Sept 30, at Dunham Massey, Cheshire, Frank Holt Diggle, OBF, MB MANC, FRCS

Ewart —On Oct 2, at Weybridge, George Arthur Ewart, BA CAMB, FRCS, aged 56

George —On Sept 26, at Paignton, Richard Julyan George, MD EDIN, DPH

Kidd —On Oct 2, Leonard Kidd, MD DUBL, DL, of Enniskillen, aged 79

Moore —On Sept 27, at Cheltenham, Robert Reginald Heber Moore, CBE, MD DUBL, late colonel RAMC, aged 83

Peck —On Sept 27, at Bourne End, Bucks, Eric Finch Peck, MRCS

Robertson —On Aug 4, in Hong-Kong, Robert Cecil Robertso MC, MD GLASG, FRFPS, MRCPE, D PH, professor of bacteriology pathology, aged 52

The Index and title-page to The Lancet, Vol I, 42 which was completed with the issue of June 27, is n ready A copy will be sent gratis to subscribe on receipt of a post card addressed to the Manager 7, Adam Street, Adelphi, W C 2 Subscribers wh have not already indicated their desire to ve indexes regularly as published should do so now

FATE OF TRANSFUSED PLASMA *

JOHN BEATTIE, M.D., D.SC. BELF.

BERNHARD BARON RESEARCH PROFESSOR AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

Two and a half years ago, the first samples of citrated plasma for transfusion arrived with the BEF in France. They had been prepared by Whitby and his colleagues who had developed a successful technique for the production of plasma in bulk and whose pioneer work was largely responsible for the adoption of plasma-transfusions as a routine in the treatment of casualties.

After severe hæmorrhage or extensive trauma, one of the most important principles in treatment is to restore the blood-volume. Isotonic fluids containing no plasma proteins produce but transient beneficial effects, while plasma-transfusions raise and sustain the blood-volume. Responses to plasma-transfusions, however, are unfortunately variable, even when clinical or experimental conditions are apparently identical. Observations of changes in hæmoglobin and plasma-protein concentrations show that such changes are due to at least five factors: (1) the simple mixing of transfused plasma with the circulating blood; (2) the formation of a surface film of plasma on the walls of the expanded vascular bed; (3) the establishment of colloidal osmotic equilibrium between the plasma of the axial stream and that of the peripheral film of plasma; (4) the migration of fluid either into or out of the blood; (5) the translocation of plasma protein from or into the blood. It is by the interplay of these factors that the hæmoglobin and plasma-protein concentrations and the total blood-volume are finally determined.

* * *

In man it has been shown (Ebert and Stead 1941) that there is no evidence of a store of red cells which can be discharged into the blood-stream to increase the total amount of circulating hæmoglobin. Consequently changes in hæmoglobin concentration are due (in man) to variations in the quantity of circulating plasma. It is important to realise at once that blood samples give an indication of the proportion of hæmoglobin in the *actively circulating* blood, for this does not constitute the whole of the blood-volume. Plasma exists in the blood-stream as two components, one acting as a fluid matrix for the cellular elements and the other forming a fluid lining for the blood-vessels. In a normal person, about 79% of the total plasma-volume behaves as the cell matrix, the remaining 21% as the peripheral film on the vessels. Since the thickness of the film increases as the velocity of the axial blood-stream diminishes, the greatest thickness is to be found in the capillaries. These vessels possess by far the greater part of the surface area of the whole vascular bed, so that the greater part of the peripheral film component of the plasma-volume is to be found in the capillaries (Hahn et al. 1942).

When plasma is added to the blood-stream it mixes with the axial blood, and simultaneously the vascular bed expands to accommodate the increased blood-volume. If this expansion is effected by an increase in the diameter of the existing vessels, the amount of plasma required to form a film over the increased surface area would be small relative to the increase in volume, and hence the fall in hæmoglobin concentration would be maximal. If however the expansion is effected more by the opening up of capillaries previously closed, then provided no fluid moves out of the blood-stream, much of the added plasma would form a surface film on these "new" capillaries. The amount of plasma available for dilution of the axial blood-stream would thus be reduced, and the fall in hæmoglobin concentration would be minimal.

Differing methods of expanding the vascular bed, then, may account for some of the discrepancies between the expected and observed values for hæmoglobin concentrations after plasma-transfusion; but another factor may be operating. Fluid shifts into and out of the blood-stream rapidly in cats and less rapidly in dogs and human subjects. If much fluid shifts out of the blood-stream after a plasma-transfusion, the fall in hæmoglobin concentration due to the transfusion is much less than that expected. Sharpey-Schafer and Wallace (1942) showed that the injection of large quantities (up to 1700 c.cm.) of normal serum produced in some normal subjects only a small and transient fall in hæmoglobin concentration (within 10 minutes). If these subjects responded to an increased blood-volume by opening up "new" capillaries, the speed with which fluid could leave the circulation would be increased, because of the increased surface area of capillary wall available for fluid to leave the blood-stream. Other subjects in the series showed falls in hæmoglobin concentration of the order of 20%, and required days to regain their pretransfusion level of hæmoglobin—and presumably their normal blood-volume. If these accommodated a large part of the transfused serum in their larger vessels—presumably veins—the loss of excess fluid would be much slower than in the first group.

If it be assumed that no red cells are added to the circulation during the period of observation—and in man this assumption is almost certainly true—then the ratio of hæmoglobin after transfusion to that before transfusion would be equal to the ratio of the blood-volume before transfusion to the blood-volume before transfusion plus the fluid transfused, provided that all the fluid transfused remained in the circulation and that all of this fluid was used to dilute the circulating blood. Since it appears certain that fluid leaves the circulation, and also that some part of the transfused plasma is required to form a surface film on the expanded vascular bed, then, if these two ratios are equated, the greater the loss of fluid from the circulation or the greater the proportion of the transfused fluid immobilised as a surface film, the greater will be the calculated blood-volume.

Hayward (1942) transfused with known quantities of serum 8 subjects all suffering from peripheral vascular disease of a sclerotic type. He observed the fall in hæmoglobin concentration immediately after the end of transfusion. When blood-volumes are calculated from these figures, 4 out of the 8 subjects showed values in excess of the normal value. These high values were 10·29, 7·35, 6·8, and 5·7 litres. As the time taken to give the transfusions of 800 c.cm. varied between 1 and 3 hours (at the rate of 5–15 c.cm. per min.), fluid loss from the circulation must have been considerable, although Hayward stated that "after an initial increase equal to the amount of serum injected, the blood-volume gradually returns to normal over a period of from 2 to 3 days." Since these subjects had abnormal vessels, it is not improbable that the immobilisation of some of the transfused serum on the walls of opened-up capillaries might account partly for the small fall in hæmoglobin concentration.

These results were obtained in subjects who had not suffered any loss of blood. Kekwick and his colleagues (1941) made a study of the effects of plasma-transfusions on subjects who had been injured in air-raids. In one of their cases a loss of 1000 c.cm. of blood had been estimated. After transfusion of 2 pints (1126 c.cm.) of citrated plasma, the hæmoglobin concentration fell from 110% to 85%. If it be assumed that all the plasma transfused mixed with the axial blood-stream and that none was lost as a surface film or from the circulation, the calculated blood-volume of this patient would have been 3829 c.cm. before transfusion. This is not an unreasonable figure and would suggest that either little fluid had left the blood-stream or little plasma had been used to form new surface films, or both these had occurred simultaneously. If however—as is almost certain—some fluid had left the blood-stream during the transfusion, it would not be unreasonable to assume that the loss would not exceed the volume (300 c.cm.) of diluting citrate solution added to the plasma. The volume of fluid left to dilute the axial stream would be about 825 c.cm. The blood-volume calculated on this basis before transfusion would have been 2805 c.cm., or a difference from the previous calculation of 1 litre.

Again some of the transfused plasma must have been used to form a surface film on the expanded blood-vessels. This would still further reduce the calculated blood-volume, but by what amount cannot be estimated. Kekwick's estimate of the loss of blood in this patient was probably conservative and a loss of 2 litres would have been more likely.

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* Based on two Bernhard Baron lectures given at the Royal College of Surgeons of England on June 2 and 10, 1942.

Assuming that after the hæmorrhage but before transfusion the blood-volume was 3 litres, and that the increase in blood-volume after 2 pints of plasma was about 825 c cm , the approximate blood-volume before a third pint of plasma was given would be 3825 c cm The hæmoglobin concentration fell from 85% to 80% after the transfusion of the third pint This would give a calculated blood-volume of 9008 c.cm , assuming that there was no fluid loss and all the plasma transfused diluted the axial stream Obviously, therefore, a considerable proportion of this third pint was lost from the axial stream either by being immobilised as a surface film on expanded vessels or by leaving the circulation If we assume that the actual blood-volume was 3825 c cm before the third pint of plasma was given, only 239 c cm of fluid would be required to provide the necessary blood dilution Thus, of this third pint (563 c cm), about 324 c cm was "lost" Since the plasma equivalent of this pint was about 413 c cm , only 150 c cm of this loss could be accounted for by the removal of the protein-free diluting fluid from the blood-stream It is therefore clear that after hæmorrhage considerable fluid loss from the circulation can take place, even when the blood-volume is still below the normal level, and at the same time there is a considerable opening up of closed capillaries

These deductions are at best indirect evidence that the capillary field opens up when the blood-volume is increased Since they are based on observed values which are themselves liable to considerable error (± 2% for hæmoglobin determinations), the calculated values for blood-volumes would be valueless were it not for the fact that three different observers have noted in man considerable discrepancies between the observed and expected values for hæmoglobin concentrations, and moreover these discrepancies were of the same sign the observed values were higher than the expected ones The same discrepancies have been noted in anæsthetised animals (Beattie 1942)

When plasma or serum is transfused into normal human subjects or experimental animals, the pre-transfusion blood-volume is restored, rapidly in some subjects, less rapidly in others Again, transfusion of plasma, with normal plasma-protein concentration, into human subjects or animals which have suffered severe hæmorrhage does not necessarily restore the blood-volume to the normal value, even when the quantity of plasma transfused is equal to or considerably exceeds the total volume of blood lost Our knowledge of the mechanisms involved in the control of blood-volume within normal limits are as yet incomplete

* * *

The plasma-protein concentration in the axial stream after a transfusion is determined by many factors If a rapid transfusion is given of plasma containing a concentration of plasma protein considerably less than that of the animal's own plasma, many animals show, about 10 min after the end of transfusion, a concentration of plasma protein in the axial stream much in excess of their plasma before transfusion This sudden excess of plasma protein cannot be accounted for by a sudden outflow of fluid from the blood-stream It seems, on the contrary, that it is due to an actual flow of plasma proteins into the circulating blood-plasma (Beattie and Collard 1942b) The stimulus to this outflow of plasma protein may be the low plasma-protein concentration in the transfused plasma , but if this is the adequate stimulus, it is not adequate in every animal , some other factor must be involved

After this preliminary rise in protein concentration in the plasma, there is a decline during the first 30 min , which may be due to diffusion into the peripheral plasma film of some of the protein tending to bring this film into osmotic equilibrium with the plasma in the axial stream Such a fall may be due also to an active removal of plasma proteins from the blood Since the fall takes place without any evidence of a change in plasma-volume or hæmoglobin concentration, it is apparently not due to an outward movement of fluid from the blood

There is now ample evidence that plasma proteins can enter the blood rapidly after hæmorrhage, to maintain a constant plasma-protein concentration in spite of the entry of fluid into the blood-stream (Wallace and Sharpey-Schafer 1941) Likewise, it has been shown in normal human subjects that the introduction of large quantities of plasma or serum into the circulation may be followed by little or no significant change either in hæmoglobin or plasma-protein concentration (Sharpey-Schafer and Wallace 1942) This can only be interpreted as a simultaneous movement of fluid and plasma protein from the circulation Similar observations have been made in experimental animals (Beattie 1942, Beattie and Collard 1942a) In man the rate of this inflow of protein to the blood may be estimated from 2 subjects included in Wallace and Sharpey-Schafer's data (1941)

Subject 19 was bled 750 c cm of blood , 4 hours later he reached his state of maximum hæmoglobin dilution, which may be regarded as the attainment of a prehæmorrhage blood volume The plasma protein concentration at this time was 6 9 g per 100 c cm , hence the total plasma protein added was at least 51 75 g , or a rate of addition equal to about 13 g per hour Assuming a body-weight of 65 kg , this would be an addition of 0 2 g per kg of body weight per hour In this subject it was determined directly that the blood-volume had been fully restored at the time of maximum dilution Subject 21 was bled 720 c cm , 19 hours later he reached maximum dilution and his blood-volume then had increased from 5·3 l before hæmorrhage to 6 6 l after hæmorrhage The plasma protein concentration before hæmorrhage was 7 8 g per 100 c cm , and at maximum dilution it was 6 8 g per 100 c cm The total plasma protein in circulation before hæmorrhage was 413 4 g , at maximum dilution it was 448 8 g , representing a gain of 35 4 g But all the plasma proteins lost by hæmorrhage were also replaced The quantity of plasma protein lost may be estimated at 54 g (taking the average concentration of the plasma as 7 5 g per 100 c cm) The total replacement in this subject was, therefore, about 89 g , distributed over 19 hours, or 4 7 g per hour With a body weight of 65 kg , the rate of replacement would be approximately 0 07 g per kg of body weight per hour. The rate of replacement is probably not uniform, and these estimates may not represent with any accuracy the rate during the early phases of replacement

The rate of removal of plasma proteins may be estimated *in 2 subjects included in the series of* Sharpey-Schafer and Wallace (1942)

These showed no change in hæmoglobin concentration when one, subject 1, received a transfusion of 1000 c cm of normal serum over a period of 13 min , and the other, subject 14, received 300 c cm of serum concentrated to four times normal strength In subject 1 no values are given for the plasma protein concentration but it can be assumed from other statements in the article that he showed no significant change in plasma protein after the injection Since the range of plasma-protein concentrations for the serum injection was from 6 to 8 g per 100 c cm , the total amount of protein leaving the blood stream was of the order of 60–80 g in 13 min , or 4 6–6 1 g per min (a rate of 276–366 g per hour) Subject 14 removed somewhere between 76 8 and 100 2 g of protein within 12 min The small rise in concentration recorded (7 2 to 7 3 g per 100 c cm) is probably of no significance The rate of removal in this subject was of the order of 6 4 –8 4 g per min , or 384–504 g per hour

There is abundant evidence that the removal of such quantities of plasma protein from the circulation, whether in human subjects or animals, is not accompanied by any significant increase in nitrogen output The conclusion that the protein is removed into a store or stores of some kind seems the probable explanation , Whipple (1940) has provided evidence that such storehouses do exist in animals When considerable quantities of plasma-protein are given by repeated transfusions to animals (Beattie and Collard 1942b), at first there is a tendency for the plasma-protein concentration, after some variation within 30 min of the transfusion, to become stabilised at or about the pretransfusion level With further transfusions, eventually a stage is reached when the plasma-protein concentration is elevated and remains elevated for some hours This may be regarded as a sign that the storehouses have been filled and that excess plasma proteins can only be retained by expanding the blood-volume or increasing the plasma-protein concentration, or by both measures

It has been suggested that the liver is an important, if not the most important, storehouse Taking the rate of removal in man to be of the order of 7 5 g per min and the average weight of the liver to be 1500 g , the liver would require to store protein at the rate of 0 5 g of protein per 100 g. of liver per min. Since the rate of blood-flow in the liver is about 150 c.cm. per min. this would mean a removal of 0·3 g. of protein from every 100 c.cm. of blood, or from about 50 c.cm. of plasma per min. over a period of 12–13 min. This rate of removal seems too high to be within the capacity of the liver alone.

There is evidence that protein can be removed from the circulation by hepatectomised animals in quantities which suggest that stores exist elsewhere than in the liver, but these results cannot yet be compared directly with the human data of Sharpey-Schafer and Wallace (Beattie and Collard 1942b). The site of these alternative stores has not been determined. It may well be that each living cell can act as a protein store. If we accept Whipple's hypothesis (1940) that the plasma proteins and the dispensable proteins of the body cells form parts of a single protein system in dynamic equilibrium, then we can visualise the plasma proteins as being one reservoir and the dispensable proteins of the body cells as another. Using this reservoir analogy, a fall in plasma proteins in the blood would tend to be compensated for by a flow of protein into the blood, as happens after hæmorrhage. When plasma-protein concentration increases as fluid leaves the blood-stream, protein moves out of the blood into the stores until equilibrium is established. This process could continue until the capacity of the body cells to hold excess protein was exhausted. Rises in plasma-protein concentration after repeated plasma or serum transfusions may thus be the first sign of protein intoxication. Though the liver is probably not the only storehouse of protein, it is undoubtedly the site of manufacture of plasma protein. Plasma protein is not only in a sense a store of protein, it is also the gold standard of protein exchange—an essential part of Whipple's dynamic equilibrium of protein.

The increase in protein reserves which plasma-transfusions bring about may be almost as important as the increase in blood-volume which follow them. The drain on these reserves in severe infections and after extensive burns is obviously great; to support them may be as valuable as to combat bacterial invasion by sulphonamides. In shock, for some reason as yet unknown, the rate of plasma-protein replacement is slow, but as the plasma-volume is increased the rate of replacement also increases (Ebert et al. 1942).

This is not the place to discuss how the dispensable proteins of the liver or body cells are mobilised and transferred so rapidly to the blood, or how plasma proteins can leave the blood-stream even more rapidly. Movement of fluid into the blood-stream takes place at rates, in man, of the order of 200 c.cm. per hour. At the same time plasma proteins can enter at rates of about 15 g. per hour. Such rates of movement are but average rates, and soon after hæmorrhage may conceivably be much higher. On the other hand, after transfusion fluid may leave the blood-stream at rates of 100 c.cm. per *minute* and plasma proteins at rates of 4–6 g. per min. It is by no means clear how these massive movements are effected without ill results.

This study of the fate of plasma-transfusions shows clearly that we have yet much to learn of the mechanisms involved in the control of plasma-volume and mass movements of plasma protein. A more complete understanding of these may enable us to answer the question "What do we mean by shock?" and to treat more effectively the conditions included under that name.

I wish to thank Miss H. B. Collard for her collaboration, Dr. R. B. Fisher for his criticism and the statistical treatment of some of our results, the Rockefeller Foundation for their assistance in providing temporary laboratories when our own were damaged by enemy action, and the President and Council of the College for their constant encouragement.

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PERIPHERAL VASONEUROPATHY AFTER CHILLING

"IMMERSION FOOT AND IMMERSION HAND"*

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Notes on the MORBID ANATOMY

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IMMERSION foot, as seen in this war in men who have been exposed in rafts and open boats with their legs immersed in cold sea water, closely resembles the condition called trench foot in the last war. The hands may be similarly affected. The following account is based on upwards of 80 cases seen in Scotland in the last 2½ years.

CLINICAL FEATURES

During exposure, which lasted for periods up to 14 days, the immersed limbs soon became numb; the hands felt clumsy, and some patients described walking "as if on cotton-wool." Pain, tingling and even itching were unusual; cramps sometimes occurred, usually in the calves. Swelling of bare feet was noticed after some hours or days, or otherwise not until the boots felt tight. The skin, red at first, was later pale, "sickly yellow," mottled, blue or black; at sea-freezing temperatures it might remain vivid red. The symptoms and signs observed in the affected limbs after rescue may be described in three stages.

1. *The prehyperæmic stage* lasts from a few hours to several days. The extremities remain cold, somewhat swollen, discoloured and numb, with fairly extensive glove or sock anæsthesia. Peripheral arteries may be pulseless for some hours, and remain so in cases going on to gangrene.

2. *A hyperæmic stage* follows, and may last 6–10 weeks. Typical findings in this stage are:

(*a*) *Vascular disturbances.*—The skin of affected parts remains hot and red at a temperature of 30–34° C., even when the unclothed body is exposed in a cool room; the usual temperature gradients are absent, digits being as hot or hotter than the groins or axillæ. The affected parts, red with a slight bluish tint, become congested on hanging down to a deep purplish red and blanch rapidly when elevated. Blanching from finger pressure disappears quickly except in parts destined to become gangrenous. Such parts are not warm like the rest of the limb; a line of demarcation forms later.

(*b*) *Swelling* often increases, especially if the extremities have been warmed; it pits on pressure, except in the digits or where there are hæmorrhages. With rest it subsides within 3 or 4 weeks.

(*c*) *Sensory disturbances.*—Tingling (pins and needles) is felt early, may increase at 7–10 days, and often lasts 6 weeks; of glove or sock distribution, it is increased by hanging or warmth. Affected parts ache or throb; shooting pains, often delayed until 7–10 days, occur as sharp stabs, frequently several at a time, at irregular intervals. Worse at night and often calling for morphia, the pains are made worse by warmth; they sometimes begin after the first hot bath. The feet may be thrust outside the bedclothes. Pains tend to be more noticeable when the feet are dependent, during and after exercise, after exposure to cold, sometimes during micturition and defæcation, and occasionally with coughing or yawning.

Sensory loss may have shrunk, but retains its glove, sock or slipper distribution; upper levels are often ill defined. Anæsthesia tends to be more extensive on palmar and plantar than on dorsal surfaces. Loss of sensation to moderate pin prick is usually more extensive than loss to cotton wool. Delayed responses to pin prick are common in areas of partial sensory loss. In the hot limbs sensory loss to heat at 40–50° C. is more extensive than to cold at 12° C. Deep pressure sense may be absent. In the great toes vibration sense is often absent, joint position sense usually retained. Several varieties of hyperæsthesia (or "hyperpathia") are found—tingling (e.g., in the digits, elicited or increased by pressure); painful over reaction to light handling or stroking, often in areas insensitive to touch, pin prick or even deep pressure; excessive but perhaps delayed responses to pin prick, causing withdrawal of the foot, in otherwise hypoalgesic areas, muscle tenderness, and tenderness accompanying inflammation (e g, infected blisters)

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* Based on a lecture given on June 3, 1942, in the "War Medicine Series" at the British Postgraduate Medical School.

(*d*) *Motor disturbances*—Muscles whose points of nerve entry lie within the cooled territory may show weakness, and later wasting and impaired electrical responses, sometimes as severe as in progressive muscular atrophy Recovery is slow (see fig 1) Knee jerks are normal, ankle jerks[†] nearly always obtainable, plantar reflexes absent or flexor

(*e*) *Absence of sweating*—Tests by the method of Guttmann (1940) showed anhidrosis approximately coinciding in extent with sensory loss (fig 2) During recovery, sweating returns rather more quickly than sensation to light touch and moderate pin prick

(*f*) *Blisters, ulcers and gangrene*—Many mild and a few moderately severe cases do not show blisters Blisters may appear during the first 3 days after rescue, or not until the 8th to 10th day (fig 3) Healing often takes 3–6 weeks, occasionally 3–5 months Parts which are to become gangrenous blister extensively The affected skin, often thick and hard, later peels extensively Hairs may be lost, toe nails shed painlessly Parts of the skin are blackened and flake off leaving pink dermis, or perhaps small ulcers Gangrene, if present, is nearly always superficial, even if the whole foot is black, tissue loss may be confined to the tips of the toes, which are shed like thimbles In one severe case, distal parts of the feet separated at 7 weeks, pain persisted and the legs were ultimately amputated

Other clinical findings were occasional transient albuminuria after rescue, loss of weight, gradually regained, mild tachycardia, pyrexia up to 99 5° F, sometimes for several weeks, and minor variations in the leucocyte picture Respiratory infections and alimentary disorders were rare

3. The *posthyperæmic stage* lasts for weeks or months after the hyperæmia has subsided Except for fresh blisters or infections, the extremities are no longer unduly hot in a normal environment Indeed for months or years after rescue there may be a cold-sensitive state, giving rise to the Raynaud phenomenon, or to coldness which may last for hours after return from a cold to a warm environment Swelling of the feet may recur when walking is resumed Tingling and pains have usually ceased and sensation is slowly returning Over-reaction to pinprick is common, especially in the sole There is gradual improvement in power and electrical reactions, and disappearance of wasting (fig 1) After 6–10 weeks there are often complaints of excess sweating, or of sweat rashes; on a hot day socks are quickly soaked, but extremities may sweat heavily even when cold Local faradism and painful stimuli—e g pinprick in "hyperæsthetic" areas—cause well-marked sweating of similar distribution, in or adjacent to areas previously anhidrotic (cf Guttmann 1940) Blisters may recur after the patient returns to normal footwear and long walks

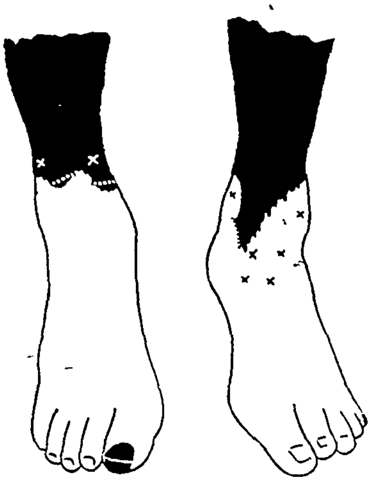

Fig 2 —Distribution of sensory loss and of anhidrosis in another moderately severe case in the hyperæmic stage Dotted line and crosses mark the upper levels for sensory loss to light touch of cotton wool and to moderate pin prick respectively Black areas indicate heavy sweating, dotted areas moderate sweating and unshaded areas absence of sweating (sweat test by chinizarin method, Guttmann 1940) In the right great toe the black area indicates the site of superficial gangrene

COURSE, PROGNOSIS AND SEQUELÆ

The mildest cases in our series had swelling, tingling, pains and sensory loss, recovering completely in 2–5 weeks, few of them were observed during their whole course, but some reported transient warmth and redness of the feet Most other cases passed through prehyperæmic, hyperæmic and posthyperæmic stages, recovering more or less completely between 3 and 12 months after exposure, many showed late sequels during the second year

Findings shortly after rescue gave little indication of ultimate progress Swelling, heat and redness, tingling and pains were of no prognostic value If paralysis and extensive sensory loss persisted into the third week, recovery took many months Blisters and gangrene have been discussed, amputation, even of toes, was rarely necessary

Follow-up for two years in 18 moderately severe cases showed that 7 were doing full duty, 2 had been invalided, and the rest were doing light duty such as office work Sequels, mostly transient and related to prolonged standing or walking in cold or wet weather, included tingling, usually slight (in 7 cases), aching or stabbing pains, often slight (in 15 cases), and swelling of feet (in 8 cases) A few had fresh blisters A foot originally damaged to the extent of superficial gangrene occasionally developed "trophic" ulcers and bone and joint changes in the digits (sequestra, hammer toes), with circulatory defects suggestive of vascular occlusion Typical intermittent claudication was not encountered A cold-sensitive state and troublesome hyperhidrosis sometimes persisted for 2 years after rescue

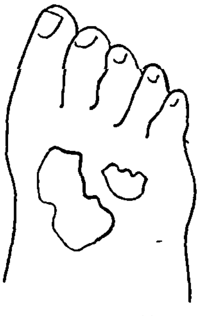

Fig 3 —Site of blisters, healed at 3 weeks in a case of immersion foot

CAUSATION, INCIDENCE AND PREDISPOSING FACTORS

The essential cause of these disturbances is exposure of the limbs to cold insufficient to freeze the tissues, probably sea temperatures ranged from –1 9° C to 10° C Sea water freezes at –1 9° C, and tissues do not freeze until their temperature falls to –2 5° C or less, so that parts immersed cannot be frost-bitten Immersion has no specific action apart from its effect in keeping the parts cold Sometimes the hands, although not immersed, are damaged as much as immersed feet An exactly similar condition, with muscle wasting, sensory loss, excess sweating and a cold-sensitive state, affected the ungloved hand of an airman who had lain exposed for 22 hours on a snow-covered mountain The term "immersion foot" is therefore inaccurate as well as inadequate The ideal term should be applicable to other tissues as well as to the feet and should express both the causative factor—cold—and the neural and vascular disturbances which result therefrom—i e, a peripheral vasoneuropathy after chilling

Judging from the patients' histories, the following factors appear to influence the occurrence and severity of this vasoneuropathy

1 *Time of exposure and temperature of water*—With sea water temperatures of 5–8° C, periods as short as 22 hours, and in one instance 14 hours, were sufficient to cause nerve damage[‡]

2 *Footwear* afforded some protection during short exposure, immersed 14 hours at 5° C, an airman's left foot, covered by four socks, was less affected than the right, which had one sock During long exposure, however, boots constricted the swelling feet and impaired their circulation, a booted foot often suffers more than one from which the boot is lost Rubber sea-boots filled with water or sweat

3 *Immobility*—Men who kept moving suffered less than those who sat still Mechanical interference with circulation accentuated the condition A man whose left knee was damaged sat with his left leg straight, keeping the right leg doubled under him, immersion foot was more severe on the right side An airman exposed for 14 hours in a rubber dinghy, holding tight to the centre rope had more severe nerve damage in the hands than in the feet, which were also immersed in water

4 *Body cooling*, as from wind, total immersion, repeated soakings or inadequate clothing, reduces the peripheral circulation

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[†] The possibility of these being absent in the prehyperæmic stage is not excluded

[‡] In cold so severe that sea water partly froze even 20 minutes immersion was followed in 2 instances by swelling blisters and neural lesions parts affected were not constantly immersed however and were exposed to air long enough for actual freezing (frost bite) to have taken place

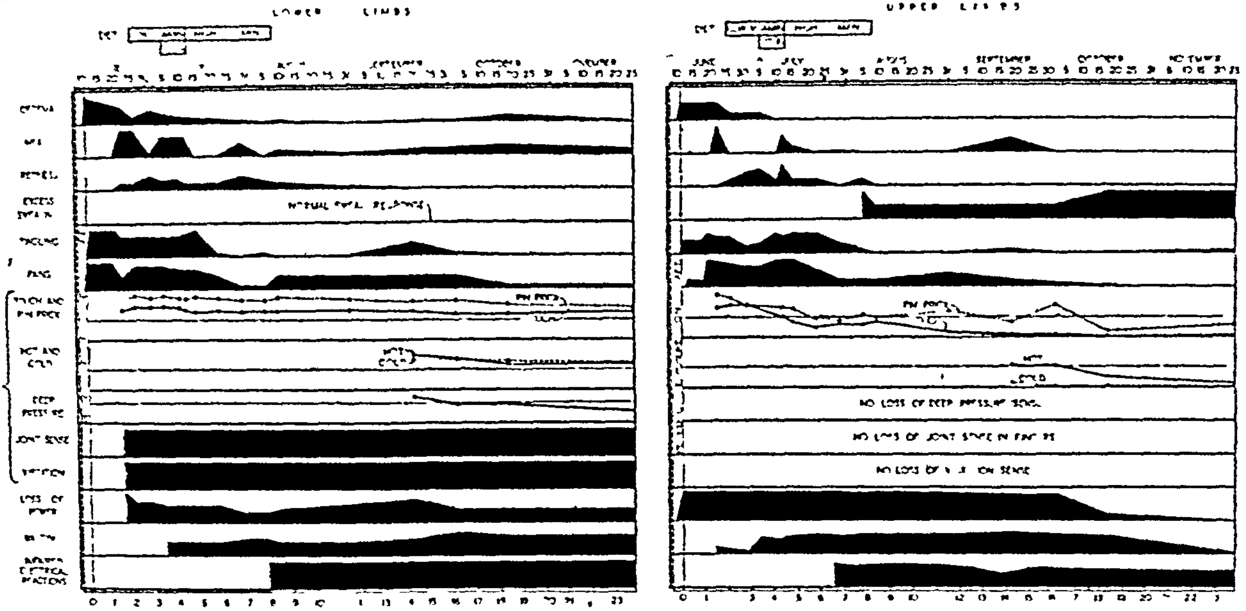

Fig 1.—Progress charts in a rather severe case of immersion foot and hand For sensory tests the extremities were divided into numerous small areas total number of areas affected was charted Progress was not influenced by the administration of vitamin B_1 or other vitamins during the periods indicated

5 *Seasickness and starvation* may be contributory

6 *Age*—Men over 40 and under 17 died from cold sooner than those of intermediate age Within the latter group, which included most cases, age and severity were not closely correlated

7 *Race*—Coloured races are said to be more prone to trench foot than northern races In this study, Arabs fared no worse than Europeans

8 *Morale*—Those who give up hope die more quickly, or suffer more severely, than their companions

9 *Treatment on rescue*—(See under pathogenesis)

There was no evidence that previous susceptibility to cold feet or chilblains predisposed to immersion foot

ALLIED CONDITIONS

Frost-bite due to actual freezing of tissues, was seen in only 3 cases in this series After chopping ice from the deck for 4 hours, a seaman developed gangrene in the ends of the fingers of the ungloved hand which held the axe A man, exposed for 3½ days at sea-freezing temperatures, suffered gangrene of the fingers holding a bailer, another in the same boat developed gangrene of the skin on which he knelt to bail These frost-bite lesions presented an interesting contrast to those of immersion foot and hand Gangrene involved the whole thickness of affected digits, and although parts just proximal to the gangrene were hyperæmic, they were not unresponsive to vasomotor control, and not insensitive to touch or pin-prick The area of sensory loss and anhidrosis over the front of the knees in the third case was only slightly more extensive than the scars which resulted from the gangrene In this and in the second case, frost-bite and immersion foot coexisted, heightening the contrast between them, the feet immersed and therefore protected from frost-bite, showed the typical vasoneuropathy of immersion foot, and no gangrene apart from superficial necrosis of a toe (fig 2)

Œdema of the feet, sometimes lasting several months, was seen in men who spent long periods in open boats with insufficient food or drink in strong sunlight, with their legs immersed in warm sea water (18–20° C) The neural and vascular features of immersion foot which are directly due to cold were absent

MORBID ANATOMY

The material available consisted of biopsies from the interdigital nerves of the foot 2½ and 4 months after exposure, and of lower limbs, in which gangrene and sepsis had been present, amputated 4 and 11 months after rescue The interdigital nerves showed almost complete wallerian degeneration and no significant vascular change The tissues of amputated limbs showed a persisting œdema The main nerve trunks showed severe degeneration and early regeneration, in the larger arteries there was slight intimal and medial fibrosis, in the large veins (1 case) patchy organised recanalised thrombus Small vessels were not significantly abnormal The muscles showed degenerative changes more severe than those following denervation

PATHOGENESIS

Vascular changes—Impressions of the state of the vessels during exposure and just after rescue are based on limited observations in the prehyperæmic stage, and on analogy with conditions during general and local hypothermia

During general hypothermia collapse of peripheral venous channels is noticed first With continued hypothermia, constriction of the large arteries occurs The blood pressure and peripheral pulse may be unrecordable for several hours, yet neither vascular occlusion nor thrombosis is a complication Blood continues to flow in the arterial channels because arterial punctures are possible (Talbott 1941)

Coldness of the affected parts in the prehyperæmic stage indicates narrowing of arteries or arterioles That large arteries are narrowed is shown by the absence of peripheral pulses, in one case pulsation returned in the left dorsalis pedis 2½ hours after rescue, and 4 hours after rescue in the right This observation also suggests that the vessels are narrowed by contraction or œdema of their walls rather than by obstruction by clot This narrowing is attributable to the action of cold, direct or through the nervous system (see Pickering 1932) Intimal changes in vessels may in some cases lead to thrombosis, although, according to Allen (1941), cold seems to inhibit intravascular clotting Judging from the findings of Brooks and Duncan (1940b), however, it is probably not necessary for the production of gangrene that ischæmia should be complete, or that thrombosis should occur Indeed, vessels may remain patent, and their contents fluid even after gangrene has set in

The transition to the hyperæmic stage often occurs suddenly, presumably when warmth to the body and limbs overcomes the vasoconstriction which resulted from cold The excessive vasodilatation which follows may be due to three factors—inflammation, damage to vessels and vasomotor paralysis Inflammatory response to damage by cold is recognisable in tissues exposed at temperatures below 15° C (Lewis 1941), and would explain early hyperæmia, swelling, pain and tenderness Heat and redness in relation to blisters, gangrene and infections at any stage are also inflammatory Direct damage to vessels by cold or ischæmia is a possibility Such damage to arterioles, if present, cannot be great, for the arterioles (see below) retain their ability to respond to circulating adrenaline Damage to capillaries, however, may explain both the persistent tendency to œdema and the intensity of skin colour, which, deepening on dependency of the limb and blanching on elevation, indicates a dilated capillary bed § Finally, the vasodilatation may result partly from interruption of vasoconstrictor fibres in the peripheral nerves In cases of immersion foot in the hyperæmic stage during exposure of the body in a cool room, the extremities remain hot instead of cooling, and their temperature is not significantly altered by immersion of other limbs in hot or cold water—i e , vasomotor reflex responses are absent

In one experiment, the external popliteal nerve was blocked with local anæsthetic In spite of the completeness of the block as indicated by the resulting anæsthesia, analgesia, anhidrosis and muscular paralysis, there was no rise in temperature in the skin of those parts of the dorsum of the foot and toes whose vessels are normally under the control of vasoconstrictor fibres from the external popliteal nerve ‖ In the same patient, skin vessels of an affected extremity were shown to be hypersensitive to physiological amounts of circulating adrenaline secreted in response to insulin hypoglycæmia Similar vascular hypersensitiveness to circulating adrenaline is known to occur 8–10 days after post-ganglionic sympathectomy, when the vasoconstrictor fibres have degenerated

These findings do not in themselves prove the existence of vasomotor paralysis , any inflammatory reddening might behave similarly There is, however, supporting collateral evidence Histologically, degeneration is seen in about 90% of nerve-fibres in affected nerve trunks, and clinically there is evidence of degeneration and regeneration in fibres conveying motor, sensory and sudomotor impulses , accompanying vascular phenomena suggest that vasoconstrictor fibres are also involved After the nerves have had time to degenerate, faradic stimulation does not give rise to sudomotor and pilomotor responses (in the feet, however, pilomotor responses may be unobtainable even in normal individuals) As after sympathectomy, electrical resistance of the skin is greatly increased Events during the posthyperæmic stage (see below) are also significant , cooling (perhaps with a cold-sensitive state), partial recovery of sensation (with hyperpathia) and of sweating (with marginal hyperhidrosis) appear after the same interval, as if all were dependent on one factor , this factor may be partial re innervation of the end organs or effector organs concerned

In the posthyperæmic stage the skin may become cooler before reflex vasomotor activity is regained Most of this cooling is probably due to lessening of inflammation , some may be due, however, to an increase in intrinsic arteriolar tone such as is known to occur 2–3 weeks after post-ganglionic sympathectomy or after section of peripheral nerves containing vasoconstrictor fibres (White and Smithwick 1942) After immersion injuries, in which factors other than nerve damage play a part, this recovery of vascular tone tends to come later than after sympathectomy The skin vessels of the cool limb, even if not yet under nervous control, are capable of dilating in response to tissue damage as from burns or infections When the damaged vasomotor nerve-fibres have regenerated reflex nervous control returns During or after this regeneration, the vessel walls may display a hypersensitiveness to cold in the form of Raynaud's phenomenon, or of delay in vasodilatation following return to warm environment ¶

Changes in nerves —The extensive cutaneous anæsthesia observed just after rescue might be due to a combined effect of cold and ischæmia That cold can act directly on nerve-endings is suggested by unpublished observations of Lewis , after cooling a portion of skin, anæsthesia developed rapidly and it fitted accurately and was limited to the area cooled The action of cold on nerve trunks was demonstrated by Bickford (1939), cooling the ulnar nerve blocked its motor, sensory, vasomotor and sudomotor impulses It is necessary, however, to distinguish between the effects of temporary interruptions of nerve-impulses and those of actual damage to nerves No record has been found of nerve degeneration experimentally produced by cooling, short of freezing, with the blood-supply intact

Lake (1917) observed that cultures of embryo tissues, including nerves, derived from warm blooded animals, were destroyed by temperatures of −6° C or less, and were adversely affected by temperatures between 5° and 15° C , but were not damaged by storage at or near 0° C These experiments on isolated tissues, although interesting, are not necessarily applicable to nerves in the intact organism Talbott (1941) states, however, that during local hypothermia a circumscribed area of the body may be maintained between 40° and 50° F (5–10° C) for several months without damage or destruction of normal tissues , perhaps because, so long as the rest of the body is kept warm, circulation through the cooled part is not interrupted

On the other hand, ischæmia of a limb without cooling results in motor, sensory, vasomotor and sudomotor paralyses, and if ischæmia is prolonged the nerves degenerate In acute experiments, at least, sensory loss is of the glove and sock type, more extensive on palmar and plantar than on dorsal surfaces (Lewis 1931), a distribution similar to that found in immersion foot Quickly reversible damage by anoxia might account for proximal parts of the extensive anæsthesia found just after rescue, less transient anæsthesia in distal parts being due to more serious nerve damage Little is known of the duration of ischæmia needed to produce nerve degeneration , it is probably less than that necessary for gangrene

Ligation of rats' hind limbs for 4–4½ hours caused sensory loss and paralysis of a duration compatible with degeneration and regeneration (Allen 1938) Highet and Holmes (1942) produced complete wallerian degeneration of the sciatic nerve by 3 hours' tight ligation of the rabbit's hind limb, the sciatic nerve being excluded from the ligatures

In these two sets of experiments arterial spasm probably persisted long after removal of the ligatures (cf Barnes and Trueta 1942) , the duration of ischæmia needed for nerve degeneration may thus be much more than 3–4½ hours

Ischæmia, combined with cold, takes longer to produce nerve degeneration or tissue necrosis than does ischæmia without cooling

Bloodless limb tissues, which die in 12–15 hours at room temperature, will if cooled to 5° C survive for over 50 hours without subsequent gangrene (Allen 1941) In rats' tails rendered anæmic by pressure of 130 mm Hg, cooling to 5° C increased the period needed to produce gangrene from 14–18 hours to 48–96 hours , at both high and low temperatures, periods of complete ischæmia less than those necessary for massive necrosis led to extensive fibrous replacement of muscles and nerves (Brooks and Duncan 1940a) Incomplete ischæmia from pressures less than 130 mm Hg also damaged muscles and nerves, although after a longer time (Brooks and Duncan 1940b)

The importance of differences in the degree of ischæmia is stressed by Highet and Holmes (1942), who repeated the procedure of Griffiths (1940)—ligation of the common iliac and common femoral arteries—in an endeavour to produce Volkmann's ischæmic paralysis

Highet and Holmes found, according to the completeness of the ischæmia attained, (1) nerve degeneration , (2) nerve degeneration with necrosis and contracture of muscles , or (3) nerve degeneration with gangrene of the extremity Demyelination appeared a little earlier than axonal disintegration, and at proximal levels might be present where axons were intact They were unable to produce, in rabbits, extensive fibrosis (collagenisation) of nerves such as they found in long standing cases of Volkmann's paralysis

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§ It is at first sight surprising that this intense colour, in warm skin, is tinged with blue Blood flowing rapidly through dilated skin capillaries could be bluish only if oxygen were being abstracted from it even more quickly than occurs in inflamed skin, which is unlikely It is more probable that the blood flow through the capillary bed is somewhat slow allowing excessive abstraction of oxygen, and that the warmth of the skin is due to rapid flow of blood through widely patent arterio venous shunts (the result of denervation Clark 1938) in the peripheral parts, and through the superficial veins into which they drain

‖ Nerve block is used in this way to test the completeness of a sympathectomy (White and Smithwick 1942) Although in the test described above the skin of the parts was already warm (28–31 C) the absence of any further rise in temperature after nerve block suggests that the vessels before the nerve was blocked were not receiving any vasoconstrictor impulses

¶ Unpublished observations of R T Grant are in keeping with the suggestion that partial re innervation of vessels may be responsible for the cold sensitive state and for the development of Raynaud's phenomenon.

In immersion foot, mode of recovery and histological findings spoke against extensive fibrosis of muscle and nerve As already indicated however, absence of fibrosis does not exclude ischaemia as a factor in nerve damage

The final verdict must await more definite evidence, particularly as to the direct effect on nerves of prolonged cold, short of freezing with the blood-supply intact Meanwhile one must regard ischæmia, probably incomplete, and with its action retarded by cold, as the most likely cause of nerve damage in immersion foot

The delaying effect of cold, in the experimental work just quoted, makes it surprising that nerve degeneration should have occurred at all, as it did in some cases, after so short an exposure as 22 hours, or in one instance 11 hours at 3 5–5° C The explanation may be that, while the limb is being warmed after rescue the temperature of the tissues including the nerves is raised by heat applied from without before their blood-supply is restored by relaxation of the main arteries, their oxygen requirement then greatly exceeds the supply (intervals of 2½ and 4 hours between rescue and reappearance of dorsalis pedis pulse have already been referred to) During a few hours of coincident warmth and ischæmia, after rescue more damage may be done than during the actual exposure There is already clinical experience that rapid warming of chilled limbs after exposure is deleterious and in some countries it is customary to keep such limbs cool with ice or snow while warmth is applied to the body This point, with its obvious bearing on treatment, calls for further experimental investigation **

Changes in skin —Blistering must be regarded as a reaction of the cells and small blood-vessels of the skin to damage by cold, although maceration of skin by imbibition of water may play a part Increased capillary permeability and increased blood-flow in the hyperæmic stage, producing a general tendency to œdema, may contribute to the production of blisters, this may help to explain why in some cases blisters do not appear until the 8th or 10th day after rescue, though in others they are seen during the first 3 days In general, the incidence of blistering is irregular and unrelated to the severity of the damage to vessels and nerves, its occurrence in the late hyperæmic and posthyperæmic stages, if patients have walked too much or worn tight shoes, suggests that in these cases minor local trauma may be the determining factor

PROPHYLAXIS AND TREATMENT

Once cold and wet penetrate, boots should be discarded before they become tight The value of greasing the skin is limited Rubbing with oil aids circulation temporarily, but may damage anæsthetic feet Active movements are valuable, postures impeding circulation should be avoided (see also under causation)

The rescued man must be carried, not allowed to walk on damaged feet The aim is to warm his body, keeping the extremities cool Stripped of wet clothing, he is wrapped in blankets, hands and feet exposed He is given hot drinks, but not left near a fire or in an overheated room Hot bottles to the feet and washing in warm—even luke-warm—water are forbidden

The feet, insensitive and fragile, may be seriously damaged by "trivial" injury Massage is contraindicated Patients are kept in bed, sometimes for many weeks, early walking may cause excoriation, blistering or increased swelling Feet are raised on pillows, exposed to the air, and kept dry Sulphanilamide powder may be applied to wounds and blisters Beneficial results from "dry cooling" the hot limbs with fans or ice bags are reported from Canada The following instructions are given to convalescents

> "Use well fitting shoes or boots Look out for inwardly projecting nails Change your socks daily Sprinkle inside your socks some talcum powder mixed with boracic powder (3 parts to 1 part) Do not walk long distances Remember your feet are still insensitive and may easily blister without your feeling discomfort You may wash your feet or take a bath, but avoid putting your feet into anything but luke warm water Dry thoroughly after washing If your feet swell or show signs of blistering or redness, rest in bed and get medical advice Nails to be cut straight and with great care to avoid injury to the skin Do not cut corns or apply caustic to them Treat your feet as if they were made of porcelain Be on your guard to prevent others damaging your feet by treading on them"

SUMMARY

Men exposed in open boats or rafts, with their limbs immersed in sea water at –1 9° to 10° C, may show evidence of damage to peripheral vessels, nerves, muscles and skin A similar condition may affect extremities exposed to cold without immersion, provided the degree of cold is insufficient to cause frost-bite

After a short prehyperæmic stage there is a stage of hyperæmia in which the affected parts become hot, red and painful, more swollen and perhaps blistered Gangrene, if present, is nearly always superficial In severe cases the results of nerve degeneration in the cooled tissues are evident in sensory loss, motor, vasomotor and sudomotor paralyses

In the posthyperæmic stage inflammation subsides vascular tone recovers, the skin temperature falls and the vessels may become hypersensitive to cold By this time the patient is usually free from swelling, pain and tingling Complete recovery, which must await regeneration of peripheral nerves, is preceded by signs suggesting partial re-innervation of end organs and effector organs—cooling (with a cold-sensitive state) partial recovery of sensation (with hyperpathia) and of sweating (with marginal hyperdrosis)

Late sequels included recurrence of pain, tingling, swelling or blisters, persistence of a cold-sensitive state or of hyperhidrosis, and occasionally circulatory defects suggestive of vascular occlusion

Probably injudicious warming of affected limbs after rescue accentuates damage by raising the metabolic demands of the tissues while they are still ischæmic For some hours after rescue such limbs should be kept cool while the patients' bodies are being warmed

The work is still in progress, and some statements made here may need correction or amplification, more pathological material and more observations in mild cases and earlier stages are needed, and certain experimental findings need confirmation

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MEDICAL HONOURS —The DSO has been awarded to T/Surgeon Lieutenant M P Martin, MRCS, RNVR and the DSC to Prob T/Surgeon Lieutenant T P Storey, MRCS, RNVR, for gallantry, daring and skill in the combined attack on Dieppe The RNVR officers' decoration has also been awarded to acting Surgeon Commander J B Hutchison, FRCSE, and to acting Surgeon Commander D W Bawtree, FRCSE

** Exudation, especially in chilled limbs which have been rapidly warmed, is another possible cause for damage to nerves (*cf* Lake 1917 Smith Ritchie and Dawson 1915) In the present investigation however there was no obvious correlation between exudation and nerve damage anæsthesia was more extensive in the prehyperæmic stage, when swelling was slight, than in the hyperæmic stage when swelling had often greatly increased

INFECTIOUS MONONUCLEOSIS

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THE unit has recently cared for 20 patients with infectious mononucleosis in a period of eight months This series illustrates the protean manifestations of a disease the ætiology of which continues to be obscure and the serology unexplained

Distribution —The group of patients was equally divided between the sexes , 16 of the cases were between 18 and 25 years of age, the age-limits being 10 and 34 years All but 4 of the patients were in the Armed Services With an average of 2 or 3 admissions per month from November, 1941, to June, 1942, seasonal variation was not evident

Onset and duration—In 3 patients the onset was sudden , in the remainder it was gradual The duration of the disease varied irregularly between 8 and 25 days Clinical improvement was fairly rapid—a matter of a few days in nearly a third of the cases It was more gradual in the remainder

Symptoms —Fatigue was commonly one of the first symptoms noted A sore throat was complained of by all but one patient, while headache, a swelling and tenderness of cervical lymph-nodes occurred in the majority The cervical lymph-nodes in some produced pain and stiffness of the neck Four jaundiced patients had nausea and epigastric discomfort, associated in one case with vomiting These symptoms occurred in only one of the non-jaundiced cases Severe lumbar pain developed in one patient with hæmaturia The degree of fever varied, being low-grade or of short duration in 15 patients , 2 patients showed well-marked daily fluctuations between 99° and 103° F over a 10-day period and 2 others had a low-grade fever persisting for nearly 2 weeks , 1 patient had a sustained pyrexia of 102° to 103° F , which fell by crisis after 6 days

PHYSICAL FINDINGS

Skin —Rashes appeared in 5 of the 20 cases This incidence is higher than that encountered by Bernstein (1940), 9% of 65 cases, or by Sadusk (1941) 4 of 54 cases These rashes were of three types , morbilliform, scarlatiniform and erythema iris A morbilliform rash occurred in 3 cases, in each of which there was an associated jaundice In 2 of the cases this rash appeared on the 7th day of the disease It consisted of coppery maculopapules, extending over the trunk and down the extremities to the backs of the hands and feet These lesions, lasting 3 to 4 days, were at first discrete and then merged into large confluent blotches, particularly on the trunk , palms and soles were spared In 1 patient a morbilliform rash developed on the 16th day and was limited to the elbow regions These morbilliform rashes left a transient brownish discoloration of the skin Itching was slight A scarlatiniform rash occurred over the trunk and abdomen of 1 patient on the 6th day of the disease and faded in a few days An erythema iris type of rash developed in another patient on the 6th day It began with redness and tingling of the hands , next day white swellings 1–2 cm in diameter and surrounded by reddish rings appeared, chiefly on the palms This rash persisted for 10 days

Eyes —Seven of 20 patients had hyperæmia of the conjunctivæ at some stage of their illness Two patients had puffiness of the eyelids , in 1 of these the œdema of the lids was associated with extreme enlargement of the cervical lymph-nodes and possibly was due to pressure on the jugular veins

Oral cavity —Petechiæ were present over the oral mucosa in 8 cases , 3 of these had a concomitant morbilliform rash and icterus One of these 3 had extremely numerous petechiæ in the mouth and hæmaturia , he had no additional hæmorrhagic phenomena Another type of mouth lesion consisted of tender irregular red papules over the hard palate, measuring 0 5 cm in diameter, which occurred in 1 case These were discovered on the 14th day, when the patient complained of soreness of the mouth , they lasted 3 days

Tonsils and adenoids —Enlargement of the tonsils was present in 17 of the 20 patients Two patients, the most severely ill in the entire series, had tonsils meeting in the midline, which caused considerable difficulty in swallowing An easily removed grey-white membranous exudate covered the enlarged tonsils in 10 cases In no patient did membrane occur without tonsillar enlargement Adenoid enlargement was suggested in 4 cases—a child and 3 adults—all of whom developed almost complete nasal obstruction and an adenoid tone of voice A lateral X ray of the head and pharynx in one of these cases demonstrated enlarged adenoids

Lymph-nodes —Enlargement of the cervical lymph nodes, particularly at the angles of the jaw, was common to all cases These nodes were often tender Axillary, epitrochlear and inguinal lymph-nodes were less constantly involved Characteristically, the enlarged nodes regressed rapidly in size, once general recovery had set in

Spleen and liver —The spleen was palpable in 11 patients by the 2nd week of their illness. Often no enlargement was detectable in the first week In some instances the spleen, not palpable with the patient in a recumbent position, was felt with the patient in the right lateral position with the knees drawn up and the left arm thrown to the right side of the bed In all cases but one the splenic edge was palpated just below the left rib margin The exception had a tender splenic edge 3 fingerbreadths below the costal cage He was also severely jaundiced and had a tender liver edge extending to the level of the umbilicus No other instances of hapatomegaly were encountered

Jaundice —Seven patients had jaundice , 4 of them had clinical jaundice and, as discussed below, 3 others had laboratory evidence of subclinical icterus Clinical jaundice developed in the latter part of the first week of illness in 3 patients A fourth patient became icteric on the 16th day As noted above, a morbilliform rash and oral petechiæ accompanied 3 cases with clinical jaundice

LABORATORY FINDINGS

Heterophile antibodies —Three types of heterophile antibodies are found in human sera, which agglutinate sheep erythrocytes These are differentiated by whether or not they are absorbed by oxerythrocytes or guineapig kidney One type, found in normal sera, is not absorbed by either reagent, whereas the type found in human sera after horse-serum injection is absorbed by both In infectious mononucleosis, the diagnostic heterophile antibodies are absorbed by oxerythrocytes but not by guineapig kidney The new modification of the Paul-Bunnell test, suggested by Barrett (1941), differentiates these three types of antibodies It was used in the serological diagnosis of all 20 patients in the present series By this test sheep-cell agglutinins in a titre of 1 40 or above are considered diagnostic, if they are absorbed by oxerythrocytes In this group of 20 cases all had a titre of 1 160 or higher, except for a single titre of 1 80 The Barrett test was repeated in 6 cases In all of these the titres of the later sera showed a rise during the 2nd or 3rd week In 2 cases the sheep-cell agglutination test was negative during the 1st week but repeated tests gave strongly positive results at the beginning of the 3rd week The sera of 4 patients had titres reaching a height of 1 2560, 2 in the 1st week and 2 in the 3rd week There was no constant relationship between the height of the titre and the clinical severity of the illness Unfortunately, the duration of the elevated heterophile antibody titre could not be followed owing to the mobility of the military population One of our hospital employees, however, had a titre of 1 80 three months after the onset of her illness

Leucocytes —There was a leucocytosis in all cases at some time during the first 2 weeks Within this period every individual reached a total leucocyte count of 10,000 per c mm or above The peak of the leucocytosis might occur in the 1st, 2nd or 3rd week, there being no regularity among the cases Leucocyte counts ranged from 4300 to 32,000 per c mm

Two patients had an initial leucopenia One of these had a total leucocyte count of 4300 per c mm on the 10th day, which rose to 21,000 per c mm on the 19th day The polymorphonuclear neutrophils in this case showed the greatest fall, numbering 1720 per c mm on the 10th day Another case was similar, with 1760 polymorphonuclear neutrophils per c mm in a total leucocyte count of 5200 per c mm on the 7th day In this last case the total white count was 15,000 per c mm a week later

It has been suggested that the so-called anginose type of infectious mononucleosis is due to a granulocytopenia Among our cases 9 had granulocyte counts below 2000 per c mm, the lowest being 900 per c mm The 2 severest anginose cases had normal or slightly increased polymorphonuclear counts of 4500 and 6800 per c mm In all of our patients there was a relative or absolute decrease in polymorphonuclear neutrophils, whereas in many instances the degree of secondary infection had led one to expect a considerable polymorphonuclear response A suppression of polymorphonuclears therefore appears to have been present Barber (1941) found similar granulocyte counts reaching as low as 960 per c mm in a series of 7 patients who had the anginose type of disease

The percentage of mononuclear cells ranged from 68% to 78% as the maximum response in each patient All smears showed varying numbers of atypical lymphocytes We do not feel, however, that there is any one particular cell type peculiar to, or specifically diagnostic of, infectious mononucleosis The chief characteristic of the "atypical" lymphocyte, as stated by Bernstein, is its variability Among the salient features common to many of the atypical lymphocytes are a deep and coarsely staining nucleus, which often shows fenestration and an irregular shape The cells are all roughly the size of large lymphocytes

Liver studies —The van den Bergh test gave a direct reaction in 5 patients, all of whom showed bile in the urine Three patients with obvious jaundice had serum levels of 4 5–7 5 mg of bilirubin per 100 c cm and a 4th patient had minimal jaundice with 1 4 mg per 100 c cm The 5th patient was deeply icteric, on the 11th day of his illness his cholesterol was 285 mg per 100 c cm, phosphatase 26, Bodansky units and bilirubin 1 5 mg per 100 c cm The low serum bilirubin was associated with a fading icterus A liver-punch biopsy specimen was reported as follows by Prof J H Dible of the British Postgraduate Medical School

> The sections show a well marked focal acute hepatitis The maximum change is seen in the portal tracts of the lobules where there is loss of liver cells and a well-developed histiocytic reaction with some early proliferation of bile-ducts There are also isolated foci of similar histiocytic reaction in other parts of certain of the lobules and the sinusoids show an excess of cells, some of which are Kupffer cells and others resemble monocytes The glycogen content of the hepatic cells is well preserved and the general appearances suggest that an earlier phase of necrosis has preceded the present histiocytic reaction The reticular pattern of the lobules is disturbed in the affected portal zones but there is no true fibrosis

Urine —Bile was demonstrated in the urine of 7 cases, 4 of whom were clinically jaundiced One patient had hæmaturia, showing 10–30 erythrocytes in the spun sediment throughout the 3rd week of his disease There was no indication that any other cause was responsible for the hæmaturia He had a normal intravenous urogram and had received no sulphonamides

Throat cultures in 12 cases demonstrated wide variation, 4 showing the usual throat flora *Streptococcus pyogenes* belonging to various groups occurred in the other cases One case showed *Strep pyogenes* group A, another showed group C, type 21, and 3 cases showed *Strep pyogenes* not belonging to groups A, C or G Three patients had pharyngeal cultures showing *Strep viridans* No one organism was common to any significant number of cases Eight cultures for *Corynebacterium diphtheriæ* were negative Fusiform bacilli and spirilla were looked for in two cases and found in both

Cerebrospinal fluid —Lumbar punctures gave negative results in 2 of 4 cases subjected to this procedure One patient had a distinct encephalitis, as evidenced by severe headache, well-marked drowsiness, nuchal rigidity and an irrational state He had 56 white cells per c mm of spinal fluid, 80% of which were lymphocytes, protein and pressure were normal Another patient without meningeal signs or symptoms had 30 leucocytes per c mm of spinal fluid, again chiefly lymphocytes, protein and pressure were normal

Sedimentation rate —This examination performed in 4 cases in an active stage of the disease was within normal limits for 3 cases and slightly elevated for the 4th case The 4th case was the only one having pyrexia, which was slight

Serology —Hinton tests (a flocculation test for syphilis) was done in all cases and were negative in the entire group Wassermann reactions done in 9 cases were positive in 1 This patient was positive on the 11th day, but negative on the 19th day With 2 exceptions only 1 of either of these examinations was carried out in the individual case As the state of positive serology is known to be transitory often lasting only 3–4 days, repeated tests might have yielded different results

TREATMENT

Treatment was largely palliative Five patients with well marked pharyngeal involvement and showing streptococci in throat cultures received full doses of sulphadiazine (30–40 g in 5 or 6 days) without demonstrable effect on the clinical course Sears (1942) has suggested that sulphonamides may be hazardous in infectious mononucleosis, because of the frequent coexistence of granulocytopenia He cites a case where polymorphonuclears were reduced to 225 per c mm Sulphadiazine was given to 5 patients in our series, in 2, the number of polymorphonuclears was slightly depressed after this drug, and in 2 it was elevated Three cases suspected of diphtheria were given 20 000–60,000 units of antitoxin, again without appreciable effect, but we recommend this treatment where there is any doubt as to the initial diagnosis Scarlet fever convalescent serum, as recommended by Berkeley (1942), was given in 1 case The patient, however, had already shown signs of recovery and no benefit could be ascribed to the serum

EPIDEMIOLOGICAL NOTE

Generally speaking, the infectivity of infectious mononucleosis did not appear to be high Sixteen of the 20 patients were military but all came from different localities without any contact with each other Likely contacts of 2 cases were examined and blood smears and heterophile agglutination tests done Of the 25 contacts, 1 man was found to have a positive heterophile test, but he denied any sort of illness in the preceding 6 months Some epidemics of this disease have been reported but in the main the disease remains one of low infectivity with sporadic occurrences

DIFFERENTIAL DIAGNOSIS AND ÆTIOLOGY

In 6 of 20 patients the diagnosis before admission was correct An equal number were sent in as acute tonsillitis, and 3 of the remainder were considered by their referring physicians to have diphtheria With the present degree of uncertainty concerning this disease a final diagnosis of infectious mononucleosis should be reserved for cases not only clinically compatible but also showing both the hæmatologic and serologic responses Three patients showing well-marked lymphocytosis and glandular enlargement, but without the serologic response, were not considered to have infectious mononucleosis These 3 patients showed persistent lymphocytosis, together with cervical lymphadenopathy The lymphocytes were all small and the sheep-cell agglutination tests negative There were certain similarities in these 3 cases to those described by Smith (1941) as infectious lymphocytosis

One of our patients was referred with the diagnosis of infectious hepatitis, having only the symptoms of catarrhal jaundice More than 50 other men from his same military unit were admitted at about the same time, suffering from an infectious hepatitis Although the patient under consideration resembled somewhat the other cases of his unit, his peripheral blood showed a characteristic lymphocytosis and the heterophile antibody test was positive 1 640 A liver biopsy was performed on this patient, as discussed above

The ætiology of this disease remains obscure Nettleship (1942) has recently reported the production of small white pearly growths infiltrated with mononuclear cells when he inoculated chorio-allantoic membranes with filtrates of nasal washings and whole blood of patients Cerebrospinal fluid from our one case of encephalitis accompanying this disease was inoculated intracerebrally into mice and rabbits and on to the chorio-allantoic membrane of eggs without any positive results

DISCUSSION

The present series of cases seems to indicate that the infectivity and seasonal variation of infectious mononucleosis is not great The military stations from which most of our patients came provided only isolated instances, and there were no outbreaks such as might be expected in other infectious diseases under the conditions of war-time crowding

There seems to be a growing awareness of the diagnosis of this disease About a third of the patients were referred with a correct diagnosis This is a fairly high proportion when one considers the protean manifestations and the similarity to other conditions Werlin and others (1941) list a series of 21 patients, all of whom were sent in with mistaken diagnoses A sheep-cell agglutination test may be negative in the first 2 weeks of the disease, and for this reason repeated tests are indicated in suggestive cases This may explain some cases reported in the past of infectious mononucleosis without a positive heterophile test

We have not found any therapy to be more than palliative Recently Hoffman and others (1942) have reported that sulphathiazole was effective in relieving symptoms in 9 cases They state that in untreated cases symptoms usually continue for 2–4 months This was contrary to our experience, for many of our cases cleared up spontaneously and fairly rapidly in 3–4 weeks We feel that it may often be difficult to impute success to therapy when one considers the variability in duration of the disease Berkeley (1942) has ascribed therapeutic value to scarlet fever convalescent serum on the basis of 4 cases , 3 of his cases obtained symptomatic relief between the 17th and 23rd days of disease We have tried this form of therapy in 1 case Many patients with infectious mononucleosis get well spontaneously in this period, and Berkeley's results are inconclusive

Some believe that a diagnosis of infectious mononucleosis can be made on the basis of lymphocytosis without the presence of atypical lymphocytes, or a positive heterophile antibody test (Reyersbach and Lenert 1941) Abnormal lymphocytes and a positive sheep-cell agglutination test were found in all 20 cases of the present series and both are essential to a proper diagnosis

No published report on the pathology of the liver in infectious mononucleosis has been encountered The presence of parenchymatous changes is interesting in view of the frequent suggestion that jaundice in this disease is caused by pressure of enlarged lymph-nodes on the bile-ducts It must be pointed out that this liver biopsy was taken from a patient who came from a community where an outbreak of another variety of hepatitis was taking place However, this man fulfilled all the rigid criteria for infectious mononucleosis

SUMMARY

Laboratory and clinical data on 20 cases of infectious mononucleosis are reviewed

Four cases had clinical jaundice and 3 showed evidence of subclinical icterus

A liver biopsy showing parenchymatous changes was obtained in one case

The diagnosis of infectious mononucleosis was confirmed in all cases by heterophile antibody tests

The blood smears showed a high lymphocytosis in all cases, and an absolute or relative decrease in polymorphonuclear cells in many

No treatment proved effective

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STERILISATION OF SULPHONAMIDES

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The recent report [1] of a case of tetanus associated with the local application of a sulphonamide powder has impressed upon hospital authorities the need for issuing sulphonamide compounds for local use in a sterile form and in a sterile container Tests which we have made show that the sulphonamide powders supplied in this country contain sporing organisms and that the cardboard containers in which the powders are supplied are heavily infected with sporing organisms including *Clostridium welchii* We have by a simple procedure been able to issue sterilised preparations of the three common sulphonamides (sulphanilamide, sulphapyridine and sulphathiazole) in a sterile usable container without any apparent physical or chemical change in the powders

TECHNIQUE OF STERILISATION

Wide-mouth screw-capped containers of 1 oz capacity fitted with aluminium caps tightly screwed on, and red rubber washers—the LCC ' Universal Containers '—are sterilised in the autoclave at 15 lb for 20 minutes The sulphonamide powder is obtained from the manufacturers in clean screw-capped glass jars, and not in cardboard containers The assistant who fills the bottles washes up as for a surgical dressing A sheet of sterile kraft paper is placed on the bench, and, with a sterilised teaspoon and a 3-inch glass funnel cut off at the neck, the sulphonamide powder is placed in the previously sterilised universal containers The powder is shaken down until the bottle is nearly full (approximately 10 grammes) and the cap is then *screwed tightly on* When the batch is ready the bottles are placed in the autoclave and heated with the steam issuing freely for 20 minutes The pressure is then raised to 10 lb and allowed to act for 30–60 minutes After removal from the autoclave, the bottles are immediately labelled, a different coloured ink being used on the label according to the contents—green for sulphanilamide, blue for sulphapyridine and red for sulphathiazole For ease in applying the powder a perforated cap may be used as a sprinkler

The rationale of the process is that, although the powder is in a tightly closed container, sterilisation is by moist heat because the powder normally contains 0 2–0 5% of water which in 10 g of material is 0 02–0 05 c cm water The water vapourises and permeates the powder completely as steam, being reabsorbed when the bottles cool down The powder does not cake because there is no addition of moisture, while the comparatively low temperature of 116° C does not alter the colour If the powder is dried in the hot-air oven at 145–160° C the moisture is evaporated, and the heat penetrates only by conduction from one granule of powder to another Moreover organisms are much more resistant to dry heat than to moist heat so that heating must be prolonged for 3–4 hours [2] The method of autoclaving therefore kills the contaminating organisms more easily, quickly, and at a much lower temperature and avoids physical or chemical alteration of the powder

In many hospital sterilisers, sterilisation at a pressure of 10 lb is not very convenient since the valves are set to give higher pressures—15–20 lb The sulphonamide powders may be sterilised at this higher pressure by the procedure outlined above without apparent detriment, except that there may be slight yellowish discoloration At a pressure of 15–20 lb for 20–30 minutes cultures of *Bacillus subtilis* spores dried on lint, enclosed in paper and placed at the bottom or in the middle of the container are invariably killed At the lower pressure of 10 lb for 1 hour, *B subtilis* spores are also killed , at 10 lb for ½ hour not uniformly so

A further advantage of the use of the screw-capped bottle is that when the cap is removed the whole top and lip of the bottle is sterile, having been covered by the screw-cap, and the powder can be poured out of the bottle directly on the wound without fear of contamination. Alternatively a perforated cap may be used which acts as a sprinkler. An important point in the process is to introduce as little extra contamination as possible. Thus, the manufacturer must try to avoid gross contamination in the preparation of the powder, while the bottles are first sterilised and then filled with powder under as aseptic conditions as possible. The fewer organisms there are to kill the easier it is to kill them.

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[1] *Pharmaceut J* May 30, 1942, p 192 *Lancet*, June 27, 1942 p 770

[2] *Lancet*, Sept 12, 1942, p 322

USE IN THE OPERATING-THEATRE

For use in the operating-theatre the following procedure is recommended. The container can be handled by the surgeon under sterile conditions and a perforated cap enables the powder to be sprinkled easily and economically. The rubber washer is removed and a hole ¼ in. in diameter is punched out of the centre of the metal cap. The rubber washer is reinserted and the cap screwed on the bottle which is sterilised before filling with the powder as previously described. After the bottles have been filled and tightly closed, they are marked on the top with a streak of cellulose paint to indicate the contents—green for sulphanilamide, blue for sulphapyridine and red for sulphathiazole. When the paint is dry (in about 30 minutes) each bottle is wrapped in kraft paper (8 in. square), so that the twist of the paper is at the top of the bottle and in the same direction as tightening the screw. A mark may be made on the kraft paper covering with an appropriately coloured crayon to indicate the particular sulphonamide.

The wrapped bottles are sterilised as above and on removal from the autoclave are labelled with a gummed label of the appropriate colour. When the surgeon in the theatre wants a container the nurse untwists the paper from the top of the bottle until the cap and upper part are exposed. The surgeon grasps the top of the bottle and pulls it out of its paper wrapping which remains in the hands of the nurse.

To sprinkle the powder, the cap is removed and the rubber washer pushed out by passing a probe or the points of scissors through the perforation. The cap minus the washer is screwed on the bottle again and the powder sprinkled as required. If perforated screw-caps only are used the bottles after filling must be wrapped in kraft paper and then sterilised and kept wrapped until required, otherwise the tops of the caps will become contaminated by dust and handling. Alternatively, a perforated cap without a washer may be used as a sprinkler. It is wrapped in kraft paper and sterilised with the bottle. When the powder is required the ordinary cap and washer are unscrewed, and the sterile perforated cap is unwrapped and placed on the bottle.

Medical Societies

BRITISH ORTHOPÆDIC ASSOCIATION

AT the annual meeting of the association in Nottingham on Sept. 25–26, under the presidency of Mr. G. R. GIRDLESTONE, F.R.C.S., the principal subject discussed was the present arrangements and future plans for

Rehabilitation of the Injured

At Harlow Wood Orthopædic Hospital Mr. S. A. S. MALKIN, F.R.C.S.E., demonstrated the work of the hospital's remedial workshops, and a film was shown illustrating the methods employed there and at a special annexe in the occupational reconditioning of E.M.S. casualty patients. Later at the Rehabilitation Centre for Miners at Berry Hill, near Mansfield, the subject was dealt with from the points of view of the surgeon, the employer, the industrial medical officer and the trade union.

Mr. E. A. NICOLL, F.R.C.S.E., surgeon in charge of the centre, said that the problem was threefold. First there was the purely scientific aspect of physical restoration; secondly the psychological one of obtaining the full coöperation of the patient; thirdly, and sometimes the most difficult, the sociological problem of obtaining the proper social context for the conduction of rehabilitation. As soon as injured every working-man's first desire was to get well as soon as possible. It was when delay occurred that doubts and fears crept in. These must be removed and morale and initiative maintained. Coöperation by the employer, the industrial medical officer and the trade union had produced, in his experience, a team in which the surgeon plays an important part from beginning to end. The result had been the almost complete disappearance of litigation. The statistical difference between a socialised and non-socialised accident service is at least 10% expressed in terms of men returned to pre-accident work, and that was something very considerable when expressed in the return of workmen to the vital man-power of the country.

Mr. GUY DE G. WARREN, speaking as an employer, gave an account of the organisation which was responsible for the development of the Berry Hill Centre. The Midland Colliery Owners Indemnity Association was formed by a group of associated companies to deal with the insurance risks of accident. It was not run for profit and represented the employment of over 100,000 men. With many others they had been shocked by the state of the treatment of injuries as revealed in the report of the British Medical Association committee on fractures. The companies with which Mr. Warren was associated were able, first of all by subsidies, to ensure throughout the area the development of efficient fracture clinics, and this had resulted in an earlier restoration to some working capacity. It was soon appreciated that the lack of facilities for reconditioning prevented men from obtaining full recovery. The job was therefore completed by this rehabilitation centre, and it had been justified from the economic and humanitarian points of view. Any national hospital plan must include similar reconditioning schemes. From his experience he considered that one centre capable of dealing with 60 patients simultaneously should treat and discharge some 500 cases annually. Of accidents in the heavy industries which require hospital treatment, 20% need a course of rehabilitation, so that one unit appears to be necessary for a hospital or group of hospitals dealing with about 3000 such cases annually. On the other hand the percentage of hospital accident cases other than those in heavy industries requiring rehabilitation treatment should not exceed 8% and for these one unit should be sufficient to serve a group of hospitals admitting 8000 such cases a year. The workman must be dealt with in an atmosphere where he knew that everyone from the hospital to the employer was out to help. A man admitted to the centre was given the assurance of the surgeons that he could be improved and afterwards that work would be available for him. The growing utilisation of industrial medical officers in factories would help to foster greater care for the injured man after his return to industry.

Dr. DONALD STEWART, speaking as an industrial medical officer, said that production was now the paramount consideration. It was being somewhat retarded by absenteeism, partly due to injury and sickness. Injuries were seriously increasing, important factors being the amount of new and unskilled labour drafted into industry, often working under overcrowded and other difficult conditions. There was therefore overloading of the casualty and outpatient departments of hospitals in industrial areas, which had to carry on with diminished staffs and with difficulties in obtaining equipment and materials. There was a challenge to hospital services and the medical profession to see that an adequate service was maintained for people in production. Particular problems were provided by young persons and married women in industry and by factory accidents at night-time and on Sundays. The industrial medical officer had an important function to perform in the general supervision of conditions of work and measures designed to prevent ill health and injury, in the initial treatment of accidents, and the follow-up of cases that can stay at work and of those who returned after treatment and rehabilitation. He is the one person who can interpret the wishes of the surgeon because of his knowledge of the conditions of work and the types of job available. There must be a steady improvement in the initial treatment of injuries. The sepsis-rate was high and insufficient care was taken of so-called minor injuries. In 1000 consecutive accidents in one factory 52% were finger injuries only; the incapacity-rate was large because they were not treated with the seriousness due to them One big problem was to provide an adequate service for the treatment of injuries in small factories which could not have their own medical units In Birmingham they had proposed the provision of a travelling surgical unit, thus taking the hospital to the factory for the more serious injuries which should be dealt with in the initial stage on the spot (One such unit provided by the Austin Motor Company was demonstrated for the meeting)

Mr J L Smyth, for the trade unions, felt that more should be done to prevent accidents by ensuring proper selection of personnel so that people did not work on jobs for which they were unfitted He made a plea for a greater understanding of each other's job as between the doctor and the workman The ignorance of the doctor about working conditions was often responsible for much misunderstanding, particularly as it referred to certification under the Workmen's Compensation Act At the same time the workman often misunderstood the doctor's position The industrial doctor may be handicapped because he is himself an employee of the firm His job, however, was to serve the workers, and probably he would himself prefer to be independent altogether of the management He deprecated the controversies arising in the courts between the individual worker and employer, with lawyers and doctors ranged on either side to fight the matter out The trade unions were delighted to have been associated with the development of the idea of rehabilitation centres such as had been outlined by Mr Watson Jones Those centres already in existence had furnished practical demonstration of their value The Trade Union Congress had approved of the idea and called on its general council to demand the Minister of Health to bring about an intensive development of this service, which would include mobile medical units The compensation bogy must be destroyed He would like to see standardised records at all hospitals and the preservation of continuity of treatment

In the discussion, Sir Walter Citrine remarked on the big element of conservatism to be overcome both on the part of doctors and workmen There was no place for the consideration of economic motives Their noblest aspiration should be by skill and organisation, whether in hospital or rehabilitation centre, to take away the disability produced by accident Trade unions were willing to cooperate with anyone, whether employers or social agencies, if they were imbued with those ideals

Mr George Perkins, FRCS, of Roehampton, emphasised the need for starting the work of reconditioning from the initiation of treatment in hospital and that the work should be throughout supervised both in hospital and centre by the surgeon in charge of the case

Mr R Watson Jones, FRCS, of Liverpool, said it was just as important to avoid the fear and litigious atmosphere that may develop after injury as to avoid non-union of a fracture Every fracture surgeon must be more than a craftsman, he must be a psychologist The newness of the idea of rehabilitation is only in putting forward the psychological aspect so prominently Rehabilitation centres must not be a counterpart of the old massage departments of hospitals They must be geographically separate, with the advantages of open air, freedom and separation from the hospital atmosphere The problem was far more than economic or humanitarian, it was vital in war-time that every man should be back at work

The President emphasised the important part played by Sir Robert Jones in the development of rehabilitation It was he who in the last war had urged the value of active cooperation of mind and limb in the restoration of movement in stiff joints and in the restoration of muscle power and coordination At the workshops at Shepherd's Bush he showed what could be done for the reconditioning of the disabled The tragedy was that much of his teaching in this direction had been allowed to slide

Reviews of Books

Obstetrics

Oxford Medical Outline Series Hervey Clock Williamson, MD, FACS, associate clinical professor of obstetrics, gynecology at Cornell University Medical College, George Schaefer, MD, assistant attending surgeon in gynecology clinic of St Luke's Hospital London Humphrey Milford, Oxford University Press *Pp 113 12s 6d*

This small volume does not pretend to be a textbook of obstetrics it is just a synopsis of practical lectures, set out in telegraphic style Controversy and hypothesis have been rigorously pruned out, bald facts are presented as a series of tabulated headings The result is concise and quickly readable, covering almost every aspect of modern obstetric teaching English students may find the details but not the fundamental principles of the text a little different from the home product, and this will do them no harm Between each page there is a blank leaf for notes and diagrams—useful in a book which is not illustrated It should prove of value for revision on the eve of the finals

Vision a Study of its Basis

S Howard Bartley, Washington University School of Medicine London Macmillan Pp 350 *18s*

A book on vision which does not describe the refractive system of the eye and gives theories of colour perception the cold shoulder is worth a second glance Dr Bartley's monograph contains almost nothing usually taught to medical students, but much which investigators are known to have been studying during the last dozen years It has been written in the missionary spirit, to tell workers in other fields what modern problems of vision are and how they are being attacked by the experimental psychologist and physiologist—particularly the so-called electrophysiologist It also throws out a hint to the neurophysiologist that the secret of cortical activity may not yield to the infinite exploration of neural elements and their interactions In vision the retinal image and the mosaic of receptors appear superficially to have an obvious relationship, yet striking predictions of experimental results have been made on a theory which relates stimulated points not on an anatomical basis but according to the [illegible] and direction of hypothetical visual field forces somewhat analogous in conception to gravitational and magnetic forces This idea—revolutionary to most of us in this connexion—occupies only a fraction of the text, but is a sample of some of the challenging thoughts which the book brings to our notice Most of the text is hard experimental fact It is a book for which many have been waiting, but many will continue to wait because (except where personal interest fires his exposition) the author is not lucid, and much of his English is frankly bad This is a pity, for, while some part of the book will be familiar ground to any specialist, few will possess such specialised knowledge as to enable them to read the whole without difficulty A little more sympathy with the reader would have made all the difference, as an encouragement to the persevering it may be said that in general it improves as it goes on

Surgery of the Ambulatory Patient

L Kraeer Ferguson, MD, FACS, assistant professor of surgery, University of Pennsylvania London J B Lippincott Pp 923 *63s*

This book covers far more than minor surgery, as usually understood Dr Ferguson, writing from personal experience, makes a strong case for ambulatory treatment of many conditions which in this country would be treated with the patient in bed Descriptions of pathology, diagnosis and differential diagnosis are as full and clear as those of the surgical procedures advocated A section on fractures by Dr Louis Kaplan is particularly good The work contains 645 illustrations, all of them apposite and well reproduced Under the American system, surgeons work in office buildings which probably lend themselves more readily to efficient surgery on the ambulatory patient than do English consulting-rooms Possibly the American patient is more stoical and cooperative than his English counterpart

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Messrs H K Lewis have published a supplement giving the names of the books which have been added to their library, up to the end of 1941, since the last complete catalogue was issued in 1937 The list of books is arranged alphabetically under the names of authors and there is also a classified index of subjects at the end The supplement is on sale to subscribers to the library at *2s*, but as a guide to current literature on medicine and allied subjects many others will find it worth the *4s* which is charged to outsiders

THE LANCET

LONDON SATURDAY, OCTOBER 17, 1942

IMMERSION FOOT

THE ill effects of chilling on the feet of soldiers has been recognised in many wars There is a good description by LARREY from Napoleon's Russian campaign of 1812, and other accounts in the records of the Crimean war (1854–56) and Russo-Japanese war (1904–05) In 1914–18 many soldiers, especially in Flanders but also elsewhere, suffered from trench foot, which GRATTAN[1] in the official medical history likened to a large chilblain, and LORRAIN SMITH, RITCHIE and DAWSON[2] clearly differentiated from true frostbite Hitherto the published cases have mainly been in soldiers, and the world war now raging may yet provide additional experience in our armies So far, however, in this war the problem has arisen almost entirely in sailors, and it will be strange if some medical writings concerning them are not discovered from former days Ships are torpedoed and sunk far from land and survivors are immersed while clinging to wreckage for many hours, or are huddled together, soaked and cold, in rafts or life-boats for many days These happenings have provided a considerable experience of the effects of cold on the feet in men of the Royal Navy and Merchant Navy, as described by UNGLEY in our present issue

The nomenclature, as UNGLEY points out, is unsatisfactory Among our sailors the condition has become known as immersion foot, or (less commonly) lifeboat leg, but it may occur when feet are not immersed and the men not in lifeboats The hands too and even the nose may be affected in a similar way The same difficulty arose in the last war about trench foot, trench fever and trench nephritis (later changed to war nephritis), none of which were confined to the trenches UNGLEY suggests the term "vasoneuropathy after chilling," based on the probable pathology of the condition he has seen in sailors, but it seems wise for the present to keep to the commonly used terms. The incidence of immersion foot has been mainly in northern waters with a sea temperature of 15° C or below—often below 10° C, but above freezing-point In its full-fledged state the condition is seen rarely, if at all, in survivors exposed in the warmer seas There has been difficulty and confusion in distinguishing between the effects of actual freezing of the tissues (genuine frostbite) and the effects of prolonged chilling at temperatures above freezing-point Clearly trench foot in soldiers (although often called trench frostbite) and immersion foot in sailors both fall into the second category Genuine frostbite has been seen by UNGLEY in sailors during this war—in the fingers when holding on to frozen rigging and in the knees after bailing in ice-coated life-boats Frostbite of the foot has probably not occurred in sailors, and in UNGLEY's two cases in which the fingers and knees were frostbitten the feet showed the typical phenomena due to immersion in water The distinction is important since the two conditions—immersion foot (or hand) and frostbite—contrast strongly in the time of exposure, in their pathology and in measures for prophylaxis and treatment It is obviously desirable to obtain material from early essential amputations for severe immersion foot, so that the pathology may be studied before any later effects of gangrene or sepsis have supervened BLACKBURN, in UNGLEY's paper, describes the changes in vessels and nerves found in late cases of amputation, which alone have been available

In attempts to elucidate the pathology of trench foot LORRAIN SMITH, RITCHIE and DAWSON carried out experiments on rabbits, in which a condition clinically very similar to the soldier's foot was easily induced They noted that the chief effect was on the blood-vessels, whereas the nerves showed only œdematous swelling of axis cylinders (which they regarded as part of the general œdema of the foot) with no degenerative changes In immersion foot the neuritic manifestations seem as a rule to be more severe and the resulting disability far longer lasting than in trench foot but only careful pathological study and experiment can clear up this point and explain the mechanism of the nerve damage BRUCE[3] drew attention to the frequency of fulminating tetanus in trench foot of soldiers, and prophylactic injection was ordered even when the skin was intact This complication has not been seen in immersion foot Complete gangrene of an immersion foot is uncommon, but unfortunately does occur Far more often, as UNGLEY emphasises the loss of tissue is superficial and even if the whole foot becomes black deep tissue loss may involve only the toes or parts of them The main problem of immersion foot is the long incapacity that so often results, already lasting in some cases for over two years

NEW OUTLOOK ON TUBERCULOSIS

THE publication last week of the Medical Research Council's report on tuberculosis in war-time gives us an opportunity to review the present trend of opinion on this hydra-headed disease and especially to study why, despite all improvements in diagnosis and therapy, early recognition and arrest of disease are still the exception rather than the rule In the days when the stethoscope ruled it was often difficult to make an early diagnosis, and the wise physician when in doubt would describe the patient as "threatened" with tuberculosis Modern X-ray technique enables us to see infiltrations unaccompanied by obvious symptoms and still less commonly by physical signs Although the detection of tubercle bacilli in the sputum is more precise than any other method of diagnosis, the early case usually has no sputum and the diagnosis is mainly radiological, often a definite opinion can be given on a single film, but in difficult cases a second or a series of films may be required before a confident statement can be made In some cases, particularly in routine periodic mass radiography, minute opacities appear and subsequently disappear in the course of a few months without any definite diagnosis being possible It might be thought that these conditions would have led to over-diagnosis, and it is therefore disturbing to find, as Wing-Commander TRAIL pointed out in our last issue, that the proportion of early TB+ cases (B 1) to moderately advanced and advanced (B 2 and B 3) in the LCC area remains almost constant at 6% to 80% for the decade 1927–37 Trail gives the reason for diagnosis, doctor and patient must meet" But it is now generally recognised that radiological changes usually come before symptoms, and there is no answer to the MRC committee's statement that "in order to discover the disease before symptoms develop the initiative of the X-ray examination must pass from the patient to the doctor. This can be effected only by mass radiography."

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[1] Grattan H W History of the Great War Medical Services Surgery of the War 1922 vol I p 169

[2] Lorrain Smith J, Ritchie J and Dawson, J *Lancet*, 1915 ii 595

[3] Bruce D *Brit med J* 1917, i, 48

The recommendations of the MRC committee are being acted on promptly by the Ministry of Health, and we are promised 30 units ready for use in a few months' time, each capable of doing 1000 miniatures a day. The committee suggest that these should be used in the first place in industries employing a large proportion of young workers, and also for nurses, medical students and merchant seamen. The superiority of radiological over clinical examination is well illustrated in Trail's survey which covered 30,130 young airmen of whom 0.22% had active and 0.36% inactive lesions; these men, it should be noted, formed a selected group as they had all passed a thorough clinical examination without the disease being detected. He estimates that in Great Britain among the supposedly healthy young adult population between 18 and 24 there are some 3 per 1000 with unsuspected active tuberculosis, making a total of about 15,000 in all. This observation throws doubt on the conclusions of the Horder Committee which state that the present system of medical examination of recruits reduces the number of cases of tuberculosis accepted by the Forces to an almost negligible figure. Fears have been expressed that the wide use of mass radiography will result in increased shortage of labour in factories engaged on important war work; it was the experience of Messrs Philips at Eindhoven that adoption of mass radiography was soon followed by so great a fall in absenteeism due to tuberculosis that the cost of the scheme was more than made up by the increased number of hours worked. It has also been objected against this method for detecting early cases that beds for tuberculous patients are already inadequate. A temporary increase of cases requiring treatment would be inevitable, but early diagnosis reduces the number of months of sanatorium treatment and should soon reduce the numbers of chronic cases needing institutional treatment. In any case, the shortage of nursing and domestic staff in sanatoriums, which now forms a serious handicap to the treatment of tuberculosis, must be faced.

The MRC committee have produced a report which should be widely read both inside and outside the profession. The probable causes of the increase of tuberculosis are discussed in detail, and the differences in the age-group incidence between this war and the last are examined. From this it may be concluded that although the evacuation of town children to rural areas where unpasteurised milk is drunk must have caused some increase in bovine tubercle the bulk of the increase is due to the human bacillus though how much is caused by increased infection under blackout and shelter conditions and how much by industrial fatigue and the strain of bombing cannot yet be determined. A recent paper[1] on tuberculosis in London in war-time shows that in this heavily bombed area the pulmonary tuberculosis death-rate has increased by 72% and the non-pulmonary by 67%, these increases being much greater than those found in the rest of the country; children were more affected than adults but there is evidence that pasteurisation has limited bovine infections and that the principal infecting source is human. Another thought-provoking report is that of the Prophit Survey of the Royal College of Physicians, summarised on p. 463; tuberculosis in young adults has been closely studied, especially by correlating Mantoux tests with X-ray examinations. The preliminary analysis shows that an appreciable proportion of young adults are now tuberculin negative, the figures for negative reactions among nursing entrants being 11.5 for voluntary hospitals and 17.8 for municipal. The survey was started in 1934 but was interrupted by the war. Their figures suggest that there is a useful correlation between the tuberculosis reactions and the development of tuberculous lesions, but before publishing them it was thought advisable to extend the period of observation.

The relative failure of treatment in pulmonary cases is naturally largely due to the rarity of early diagnosis; but this is by no means the whole story, since many cases which should have a good prognosis die from the disease. Tuberculosis mortality has been described as a social barometer. Probably the great fall in the incidence of the disease during the last two generations has been due more to improvement in the standard of living than to the work, good as it has been, of dispensaries and sanatoriums. The weak spot on the treatment side is the period following discharge from sanatorium; few patients at this stage can safely return to full-time work under ordinary industrial conditions, and they require plenty of good food and satisfactory housing conditions. At present, as Heaf and Rusby[2] have calculated, allowances from public funds for the tuberculous patient who is unfit for work are so meagre that if the whole amount is spent on food only just enough to meet his requirements can be purchased. The patient with quiescent disease steers a perilous course between the Scylla of underfeeding and the Charybdis of overwork. The MRC committee's case for the introduction of satisfactory methods of industrial rehabilitation is in fact unanswerable. The financial position of the worker drawing NHI disablement benefit of 10*s* 6*d* a week without allowance to his family is contrasted with that of the soldier disabled by tuberculosis who receives 37*s* 6*d* a week plus 9*s* 2*d* for wife, 7*s* 1*d* for first child and 5*s* 5*d* for each other child—yet the need is the same. Among the recommendations made for the rehabilitation of convalescent non-infective cases are part-time work and "modified" work—that is, work under less strenuous conditions than usual—in each case the wages earned being subsidised from national funds in order to ensure an adequate standard of living.

Mass radiography cannot be used extensively in diagnosis unless the economic penalty now attached to tuberculosis is removed; while it exists adequate cooperation from the workers cannot be expected. The Minister's announcement on Oct. 8 that local authorities have been authorised to grant financial assistance while the breadwinner is undergoing sanatorium treatment is of happy augury. If the Government would go one step further and announce pensions for chronic cases and subsidised wages during rehabilitation, the spectre of want could be banished from the tuberculous population.

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[1] Daley, W. Allen and Benjamin, B. *Brit. med. J.* Oct. 10, p. 417.

[2] Heaf, F. R. G. and Rusby, N. L. *Tubercle*, 1940, 21, 17.

ELECTROENCEPHALOGRAM IN WITNESS-BOX

At a general court martial last winter a soldier who had fired a rifle at a corporal pleaded that he had no knowledge of the affair but had suffered a head injury a few hours before the alleged time of the incident. No-one had witnessed the injury, and there was little clinical evidence to support the plea, except that the attack was without motive, unpremeditated, and was followed by singularly apathetic behaviour. An electroencephalogram showed abnormal changes compatible with a head injury of the severity described by the prisoner, and the abnormalities subsided in a couple of weeks. This evidence was accepted and the man was discharged. On July 14, a man was tried at the Winchester Assizes for a singularly brutal and seemingly purposeless murder. The defence was that the act was committed in a period of postepileptic confusion. Expert medical opinion supported this view on the evidence available, some of which was tenuous. Evidence was produced that the man had an abnormal EEG and that the changes seen after over-breathing were epileptic in character. It was pointed out that although an absolute diagnosis of epilepsy could not be made on the EEG alone, since no subclinical attacks were seen, the presence of such a record in a man who had behaviour suspicious of epilepsy made that diagnosis very likely indeed. The prisoner was found guilty of murder but insane. A correspondent in the *Times* of Sept 16 suggests that the verdict might well have been different if the EEG had not been before the court. Since these two cases, similar evidence has several times been called elsewhere, and it has been accepted in courts of law in the United States for some time past.

The electroencephalogram does not show characteristic changes in every case of epilepsy, and in only a minority of epileptics are true subclinical attacks seen. Furthermore the relatives of epileptics, themselves apparently normal, may show similar abnormalities,[1] and unstable people, including psychopaths,[2] criminal delinquents and even constitutionally predisposed neurotics,[3] are liable to have an abnormal EEG. HILL[4] has pointed out that since it may reasonably be assumed that a high proportion of murderers have unstable temperaments and are consequently likely to have an abnormal EEG, the value of the test is reduced, since a diagnosis of psychopathic personality is no defence in law. He therefore rightly urges the most conservative use of the method. It is true that the EEG provides proof positive of epilepsy in only a small proportion of epileptics, and that some have quite normal records, but in the cases cited it was used, and accepted by the court, as corroborative evidence. In clinical medicine it is rare, perhaps unknown, to find a test which is infallible, but this does not prevent these tests being used to add to clinical knowledge. In the court of law a final opinion as to fact is reached by question and answer in much the same way as in medicine, and in the end it is not an infallible opinion, but only one which may be accepted beyond all reasonable doubt. Thus radiology and serology, with all their pitfalls, are called to add to the sum total of knowledge which is used to achieve justice. The limitations of the EEG are sufficiently understood for it to be used in the same way. Its sphere of usefulness includes behaviour disturbances of all sorts, the epilepsies and the abnormal states which accompany them, as well as the less clear cut disorders of psychopathic adults and delinquent children,[5] and of psychotics. It has been accepted as corroborative evidence of a head injury, and no doubt will often be used in compensation cases. Now that it has been shown to have forensic value, its application should be guarded, lest it be abused. There are few instruments in the country, and still fewer operators competent to give an opinion in a court of law. Given the apparatus it is easy to obtain a record, and one who gives an opinion has few to criticise him, so that the method presents a fertile field for the unscrupulous. Knowledge of the clinical interpretation of results is advancing steadily, and the method is now incorporated into the routine investigation of several disorders, but until recently it has been used mainly for research purposes, and has been absorbed into the clinical sphere with commendable discretion. Now that it has been brought to the public notice in courts of law steps should be taken to safeguard its use.

It is perhaps an over-simplification to suggest that men have been hanged for the lack of an EEG. Insanity for the purpose of determining criminal responsibility in an assize court is notoriously different from insanity as seen and studied by the medical man. Many people are convicted of murder whom medical witnesses regard as insane. The official statistics, however, provide material for believing that defences of insanity which fail to avert a conviction for murder are nevertheless often sufficient to save a man from capital punishment. The trial of Ronald True in 1922 for the murder of Gertrude Yates illustrated the sharp division between the legal and the medical standard. True was convicted of murder but, after further medical inquiry, was respited and sent to Broadmoor. The law-courts accept the fact that epileptic murderers are known to medical science. The symptoms of epilepsy in the case of True were slight—little more than sudden lapses in conversation and memory. NORWOOD EAST, giving evidence on his behalf, explained the two kinds of epilepsy from which True might have suffered—epileptic mania or fury, a wild condition of excitement lasting a short time and leaving no recollection of what had happened, and epileptic automatism where also the patient would have no subsequent recollection. Mr Justice MCCARDIE put the point carefully to the jury. If True killed Gertrude Yates while in an actual epileptic seizure, then, even though he knew the physical nature of the act and also that it was morally wrong and punishable by law, the jury ought to return the verdict of "guilty but insane." True's mental instability was ascribed to other causes than epilepsy. Here an EEG might have thrown light on the diagnosis, but the real obstacle in all these cases is that the machine may contribute proof of a specific dysrhythmia from which conclusions may be drawn, but it cannot tell the jury the state of a man's mind at a particular moment in the past. It does not prove sanity or insanity for the purposes of judge and jury. By itself it cannot establish automatism on some past date, it cannot declare a man's consciousness or intentions at some moment two months ago. That missing evidence is what the courts require.

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[1] Lennox W G Gibbs E L and Gibbs, F A *Arch Neurol Psychiat* 1940 44, 1155

[2] Hill D and Watterson D *J Neurol Psychiat* 1942 5, 47

[3] Williams, D *Ibid*, 1941 4, 257

[4] *Times* Sept 25 1942

[5] Jasper, H H Solomon P and Bradley, A *Amer J Psychiat* 1938, 95, 641

Annotations

DOSAGE OF VITAMIN D

THERE is no certainty about how much vitamin D children need A League of Nations commission in 1938 put the requirements of infants at 400–500 IU daily, and President Roosevelt's National Nutrition Conference last year endorsed a figure of 400–800 IU daily for either infants or children up to 15 years but higher estimates have been made A subcommittee of the British Pædiatric Association, consisting of Dr Wilfred Sheldon, Dr Charles Harris, Prof Noah Morris and Dr Helen Mackay, have summarised present views and tried to establish some working instructions for mothers They say that although a daily intake of 500 IU would probably protect most full term infants and young children from rickets a daily allowance of 700 IU would give a wider margin of safety The cod-liver oil compound now supplied by the Government for children under 5 years contains " not less than 100 IU of vitamin D per gramme," and the dose recommended rises from half a teaspoonful for babies under 6 months to a teaspoonful, thus providing some 200–400 IU daily, a dosage which the subcommittee consider inadequate They also disagree with the advice to give babies under 6 months less than older babies, for the incidence of rickets is as great under as over 6 months, and in view of the more active growth in the earlier months the prophylactic requirement of vitamin D is greater then . They advise that vitaminised oil for distribution to children should be reinforced with irradiated ergosterol so that a teaspoonful will contain the daily allowance of 700 IU, as well as the present 3500 IU of vitamin A Mothers should then be told to begin by giving the baby a few drops of this oil daily when a month old, and work up to a teaspoonful daily in a fortnight This applies whether the baby is on breast or bottle The premature infant (birth-weight under 5½ lb) requires something like twice as much vitamin D as the full time infant, so that the mother should give these underweights two teaspoonfuls of the oil, or 1400 IU daily, divided into four equal doses, this should be continued summer and winter Babies whose birth weight was over 5½ lb need not be given vitamin D in summer provided they are suitably exposed to sun and skyshine for at least four hours daily The subcommittee advise the same dose of 700 IU daily for older children on a mixed diet, dropping to 3500 IU a week at school age, when it might be issued with the school milk or school dinners Pregnant and nursing mothers should also receive a supplement of 700 IU daily, and this will not take the place of the supplement for breast fed babies Finally, the subcommittee suggest that for the information of doctors the composition and vitamin content of cod-liver oil compound should be given on the label, they might have added that a similar statement should appear on all vitamin preparations

CONTROL OF THE TYPHOID CARRIER

THE chronic carrier is the most important factor in the maintenance of endemic typhoid and paratyphoid infection and is often the source of epidemic outbreaks Typhoid, though now rare in this country, is still responsible for much morbidity and mortality in America and in many subtropical countries, here it is being supplanted by paratyphoid, of which there has been an increased prevalence in recent years and often in a form so mild or atypical as to be clinically unrecognisable The control or cure of the carrier is therefore essential if these diseases are to be eradicated After an acute attack of typhoid or paratyphoid, many patients continue to excrete the pathogen for weeks after they are clinically well Persistent convalescent and chronic carriers are most often elderly married women—for example, in the 1941 Liverpool outbreak,[1] of 16 (out of 339) cases who continued to excrete the paratyphoid bacillus for more than 16 weeks after infection, one was a man aged 52, 2 were young children and 13 were women, 9 of them over 40 years of age A carrier is arbitrarily classified as a chronic carrier if excretion continues for more than a year, and it is estimated that 2–4% of clinical cases become chronic carriers, but a chronic carrier state may develop in a person who has never had a clinical attack

The gall bladder is the focus of infection in most enteric carriers, and cholecystectomy has so far been the only reliable method of cure In two collected series,[2 3] 75% and 77% of the operated cases were permanently cured, and no doubt these results could be bettered It is important to know that cure may result though the patient goes on excreting the pathogen by drainage tube or in fæces for weeks or even months after cholecystectomy But even with improved surgery and anæsthesia the operative risk on a stout, elderly woman is not negligible, and of course many carriers will refuse the operation, so that alternative methods of control or cure must be sought The carrier can by law be forbidden employment in any trade or business concerned with the preparation or handling of food or drink for human consumption, but apart from this legal restriction, plus education in personal hygiene, control is not easy, and the carrier, as in the famous case of Typhoid Mary,[4] may readily evade the restriction Isolation, except in institutional cases, is not permissible in England, although in Scotland the local authority has the power to deal with a person adjudged to be a carrier of an infectious disease as though the person actually suffered from the infection

While many carriers remain apparently well, some have the symptoms of gall-bladder disease, and most of them, if untreated, experience a sense of contamination which has sometimes led to mental breakdown Any *medical* treatment, therefore, which offered any prospect of cure would be welcomed by these sufferers In the past such treatments as chemotherapy, physiotherapy, bacteriophage, vaccines and alteration of the intestinal flora have consistently failed to cure[2] Lately various sulphonamides (sulphapyridine,[5] sulphasuxidine,[6] sulphaguanidine and sulphadiazine[7]), and mepacrine[8] have been tried without success, but claims have been made for the soluble tetraiodophthalein which is used for X ray visualisation of the gall bladder In the United States Saphir, Baer and Plotke[9] treated 65 biliary carriers in a mental institution with intensive dosage of iodophthalein, they gave 4 g doses by mouth three times a week with the patients on a low fat diet, the drug being taken in the morning so as to get maximum concentration and retention in the gall-bladder during the night There were no ill effects, apart from some nausea and occasional diarrhœa Of the 65 treated patients, 21 (32 3%) gave three consecutive negative cultures of duodenal contents but in only 5 of them did the stools become persistently negative It seems unlikely that the remaining 16 cases had intestinal foci in addition to that in the gall bladder, more likely duodenal aspiration was failing to recover gall bladder bile It is significant that in the cured cases visualisation of the gall bladder was good, and attempts at cure by this or allied substances probably require a gall-bladder in which the drug will be retained

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1 Holt, H D Vaughan A C T and Wright, H D *Lancet*, 1942 i 133

2 Browning C H et al *Spec Rep Ser med Res Coun Lond* 1933 No 179

3 Golla F McGrath, M J and Ashby W B *J ment Sci* 1936, 82 263

4 Soper, G A *Bull N Y Acad Med* 1939 15, 698

5 Holt, H D and Wright H D *J Path Bact* 1942 54 247

6 Kirby, W M M and Rantz L A *J Amer med Ass* 1942 119, 615

7 Cutting W. C and Robson G B *Ibid*, 1942 118 1447

8 *Mon Bull emerg publ Hlth Lab Serv* September 1942 p 6

9 Saphir W , Baer, W H and Plotke F *J Amer med Ass* 1942, 118, 964

and concentrated Although the results obtained by Saphir have not been confirmed by other workers they are sufficiently encouraging to warrant further research along this line It is suggested that for elderly patients iodophthalein should always be tried before surgical intervention, and the drug might be useful in hastening cure of the convalescent carrier

SOAP FOR THE CUT HAND

This is a war of production and with our limited man power any wastage due to the minor injury is serious According to Stewart[1] over 11% and probably up to 20% of minor injuries in which compensation for over 3 days incapacity has to be paid are due to sepsis In a consecutive series of 1000 cases that attended a factory surgery over half came because of hand injuries The treatment of such injuries is often unsatisfactory and usually consists of a perfunctory iodine dab without preliminary cleaning Kerrigan[2] aware of the obvious failing of the workman's hand 5 years ago started using soap and water only for cleaning such wounds Writing of his experience in Michigan City, a big lumber centre he assures us that not a single case out of 9105 compound hand injuries where attention was given within the first few hours required admission to hospital the 10 cases which were admitted first attended one or more days after the accident Some cases did develop minor infection but with suitable splintage all were able to continue at their work under careful observation Kerrigan prefers a neutral white soap which is applied with cotton wool swabs and also uses benzene or ether to clean the surrounding stained greased skin of the workman But he points out that for the severe injury careful wound excision is still absolutely necessary In this series no sulphonamides or other forms of chemotherapy were employed A neutral soap is not essential and indeed Colebrook[3] has shown that yellow household soap has a bactericidal power superior to refined soap This bactericidal power is greater in warm water, and 5 minutes washing in 3 or 4 pints of water will destroy most of the pathogens commonly met with in sepsis Early attention to the cut hand by soap soaks and washing should be taught to the factory staff The bandage soiled at work later forms a path for infection so there is still need for some waterproof cover if the workman is to go on with his job and the best form of rehabilitation treatment for the injured hand is often a man's ordinary work.

THE STREPTOCOCCUS IN ACUTE RHEUMATISM

SINCE the pioneer researches of Poynton and Paine at the beginning of the century the part played by streptococci in the ætiology of acute rheumatism has developed into a major problem Much of the earlier work had for its object the isolation of microbes from the fluids or tissues of cases of acute rheumatism, and on the infrequent occasions that cultures were obtained they were mostly of non-hæmolytic streptococci, particularly *Streptococcus viridans* these organisms were therefore formerly regarded as the most likely candidates for the ætiological rôle During the past ten years, however largely as a result of the epidemiological studies of Coburn, hæmolytic streptococci have seemed increasingly important The application to this field of the refinements in bacteriological technique introduced by Todd, Lancefield and Griffith has resulted in an extensive literature which has recently been surveyed by Green[4] Bacteriological studies have demonstrated an epidemiological relationship between hæmolytic streptococcal infection of the throat and the incidence of acute rheumatism Apart from clinical infections, a high carrier-rate for hæmolytic streptococci has also been observed in rheumatic subjects thus Green found group A streptococci in 50 5% of rheumatic throats compared with 12 5% of the throats of normal controls In individual cases of rheumatic fever too, relapse is often accompanied by the reappearance or an increase in the numbers of hæmolytic streptococci in the throat The proportion of individuals displaying skin sensitivity to the injection of streptococcal extracts has been found to be considerably higher in rheumatic subjects than in normal controls Green found while this sensitivity was not specific for any one kind of streptococcus it occurred more often when the extracts were from hæmolytic streptococci It should be noted that these observations apply to extracts of bacterial bodies—'endotoxins'—and not to streptococcal exotoxins Since the demonstration by Todd of the antigenic nature of streptococcal hæmolysin and of the practicability of measuring the corresponding antibody titre in human serum it has been established that these anti-streptolysin titres show a well marked rise after infections with hæmolytic streptococci several workers have found that anti-streptolysin titres are also significantly raised in many cases of acute rheumatism Green points out however that recrudescence of the disease does not necessarily result in further increase in titre While attempts to isolate hæmolytic streptococci from joint fluids have been seldom successful, Green recovered these organisms from the heart valves at autopsy in 8 of 9 cases of acute rheumatic carditis Thomson and Innes repeating this work were also successful in 5 cases out of 10 Green considers that the available data support Coburn's contention that the rheumatic state results from an abnormal response to a hæmolytic streptococcal infection leading to sensitisation of the tissues, on coming into contact with further supplies of the antigen the sensitised tissue may then react by producing the characteristic lesions of rheumatic fever Recent work also lends support to the view that heredity is an important predisposing factor

MECHANICAL CONTROL OF COLOSTOMIES

MANY ingenious operations have been devised to give mechanical control of the bowel in cases of permanent colostomy These have included the use of specially designed obturators, the fashioning of the artificial anus in such a way that the stoma finally becomes very small and can be corked, insertion of the proximal limb of the colon through a specially constructed muscular ring and implantation of this limb through a subcutaneous tunnel None of these has been popular in England, though they are practised in France Italy, Germany and some Latin American countries R B Gonzalez of Venezuela[1] has modified Cuneo's[2] operation and reports favourable results in 21 out of 26 cases His aim was to secure true continence and not merely regularity of the bowel by means of dieting and colonic lavage In his operation the exteriorised functioning limb of intestine is closed by a compression device Two parallel horizontal incisions are made in the left iliac fossa and carried down to the external oblique aponeurosis, the oblong area of skin thus outlined is made into a tube by stitching the two edges to one another The upper edge of the wound is undermined and the peritoneum is exposed and opened A loop of sigmoid is drawn through the wound and divided with a cautery between two enterotomes, the lower end is invaginated and returned to the abdomen The peritoneum is sutured round the upper limb of colon and the muscular layers are closed round it without compression The limb of bowel is then carried across the skin tunnel and brought out through the lower flap of the original wound The upper and lower skin flaps are then united in a bridge over the limb of colon, which thus lies between the skin superficially and the skin tunnel deeply The cut end of the bowel, still secured by a clamp, is fixed by a few sutures to the small circular skin incision, the clamp is left on for 24–48 hours, and when it is removed pains are taken to avoid soiling the wound by fixing rubber sheeting around it When all is healed the compression device, a special forceps shaped somewhat like a safety-pin, can be used One arm of this is passed beneath the bowel through the skin tunnel and the other above it, the two arms being fastened together, by means of a bolt and nut, tightly enough to maintain continence without producing pressure necrosis of the entrapped portion of bowel Dilators are used for some weeks after operation to keep the skin tunnel from contracting unduly Of Gonzalez's 26 patients, 1 died from peritonitis, 2 developed pressure gangrene of the loop and lost the skin tunnel, 2 had a fairly severe ventral hernia, and in the remainder the result was apparently satisfactory The operation shows great ingenuity, and is comparatively easy to perform, but it obviously cannot be done if there is much stenosis of the rectum or lower sigmoid, because the invaginated loop of bowel distends and may rupture, it is contra-indicated in carcinoma of the rectum or lower reaches of the sigmoid, nor is it suitable, as Gonzalez himself points out, in cases of diverticulitis because the sigmoid is often fibrotic, and it is too long an operation to be borne by any patient who is seriously ill Again, results may be complicated by peritonitis, infection of the wound, distortion or stenosis of the tunnel, ventral hernia or cellulitis, and finally unless the safety-pin device is adjusted by an intelligent person the compressed portion of the gut may become œdematous or even gangrenous In England, then, indications for this operation are very limited Gonzalez operated chiefly on cases with lymphogranuloma venereum of the rectum or lower sigmoid, and for such patients it may have a place The condition is rare in Britain, but in any case most surgeons here would probably prefer to treat it palliatively with graduated rectal dilatation, mild local disinfectants and sulphathiazole both locally and by mouth If colostomy was necessary probably most would favour loop colostomy, or the defunctioning type of colostomy devised by Devine

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[1] Stewart D, British Orthopædic Association annual meeting at Nottingham on Sept 25 1942

[2] Kerrigan P L *Surg Gynec Obstet* 1942 75 165

[3] Colebrook L *Bull War Med* 1941 2 73

[4] Green C A *Ann rheum Dis* 1942 3 1

[1] *J int Coll Surg* 1942, 5 141 [2] *Pr med* 1922, 30, 335

LIVER NECROSIS AFTER BURNS

Necessity, the mother of invention, is sometimes too importunate in her choice of mate to be critical, the offspring may then develop blemishes that betray the hasty marriage The therapeutic problem of burns was immense, when therefore tannic acid treatment was first introduced by Davidson in 1925 and the immediately satisfactory results had been widely confirmed there was little room for criticism Later critics have in general confined themselves to saying that tannic acid should not be used on this or that part of the body, or that better tanning was produced by other agents such as silver nitrate or triple dye or by combinations with antiseptics and bacteriostatics Only of late, with the general reawakening of interest in the investigation and treatment of injuries, have the effects of tannic acid treatment been more closely re-examined The fact that liver necrosis in burns [1] has become widely recognised only since tannic acid therapy was introduced might be related merely to the longer survival of severely injured patients The majority of such used to die from plasma loss on the first day, but surface coagulation and serum transfusion have considerably decreased the mortality from this cause That the liver necrosis might to due to therapy is an alternative possibility It seems unlikely that the plasma or serum would be to blame, since the infective jaundice recently found to be transmitted by serum (whether given for mumps, for yellow fever prophylaxis or for other reasons) has an incubation period of several weeks The remaining possibility, that the liver damage might be due to tannic acid, has been investigated by Wells, Humphrey and Coll [2] They detail and illustrate well-marked liver damage in rats, rabbits and guineapigs after subcutaneous injection of tannic acid The damage was proportional to the amount injected These results, if confirmed, would not necessarily mean the abandonment of what has proved a highly effective mode of treatment, but they would call for an attempt either to inhibit this harmful effect or to find some other coagulative agent with less undesirable side actions

IMPACTION OF THE EPIGLOTTIS

Lately Caiger [3] of Durban, South Africa, has drawn attention to the possibility that impaction of the epiglottis in the larynx may obstruct breathing during anæsthesia Caiger's view is that if muscular relaxation allows the epiglottis to fall back sufficiently for the inspired air to impinge on its anterior surface the air may force the free part of the epiglottis through the glottis He has met with half a dozen cases of such impaction, and has relieved it by drawing the tongue forward and lifting the epiglottis with the finger, on one occasion disimpaction produced an audible click The fact that this impaction cannot be produced or demonstrated after death is no certain proof that it does not arise during life, but the size, consistency and position of the normal epiglottis make it difficult to imagine its being blown or sucked into the larynx, for this to happen the epiglottis would have to be unduly pliable Certainly this is not a common cause of obstruction The usual causes of obstructed breathing are well recognised and readily relieved when treated promptly Caiger, however, suggests that swabbing out the pharynx, drawing forward the tongue and artificial respiration may all be effective sometimes because they release an unsuspected impaction His contention that impaction may have been the cause of a considerable proportion of unexplained anæsthetic deaths is unconvincing, for most records of such deaths expressly state that there was no obstruction to breathing All the same, Caiger's suggestion may lead anæsthetists to study with enhanced interest the exact arrangement of the upper air-passages when next they meet with obstructed breathing in anæsthesia

Sir Henry Dale, PRS, has accepted the directorship of the laboratories of the Royal Institution, with the Fullerian professorship, in succession to the late Sir William Bragg His appointment is, at his own request, limited to a period of three years, so that the managers may then be free to consider future policy

Dr Arthur Ellis has been appointed regius professor of medicine in the University of Oxford in succession to Sir Farquhar Buzzard, who is retiring Dr Ellis was director of the medical unit at the London Hospital and held a chair of medicine in the University of London until his appointment six months ago to the scientific staff of the MRC as director of research in industrial medicine

Sir Hugh Lett will deliver the second Moynihan lecture at the University of Leeds on Thursday, Oct 29, at 3 PM He will speak on William Hey and after

Next Tuesday will be available the 21 monographs on the *Control of the Common Fevers* which have been arranged for publication with the help of Dr Robert Cruickshank The unwelcome delay has at all events had the compensating gain of making it possible to include chapters by writers who were then on active service abroad While the book is based on a series of articles which have already appeared in our columns and have been widely appreciated, these have been revised or rewritten and nearly as many others added Particulars will be found on our front cover

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[1] Wilson, W C, MacGregor, A R and Stewart, C P *Brit J Surg* 1938, 25, 826

[2] Wells, D B, Humphrey, H D and Coll, J J *New Engl J Med* 1942 226, 629

[3] Caiger, G H *J Laryng* 1942 57, 250

Special Articles

TUBERCULOSIS IN YOUNG ADULTS

A PRELIMINARY ANALYSIS OF THE PROPHIT SURVEY

F RIDEHALGH, M B CAMB
PROPHIT SCHOLAR RCP 1934–40 DEPUTY CLINICAL TUBERCULOSIS OFFICER, LEEDS

IN 1934 the Royal College of Physicians of London inaugurated under the terms of the Prophit Bequest a survey scheme with the following objects

1 To determine the level of tuberculous infection by the graduated Mantoux tuberculin test

2 To correlate the results of the Mantoux test with the results of X ray examination of the thorax

3 To determine the value of mass X ray examination as a means of revealing unsuspected pulmonary tuberculosis

4 To assess the possible prognostic significance of the Mantoux test

5 To discover the existence and importance of opportunities for primary tuberculous infection in the population studied

6 To determine the significance of certain abnormal appearances in the chest X ray which are not yet fully understood

This paper is a record of the investigation so far as it was completed in the five years immediately before the outbreak of war and is summarised from a detailed report presented to the College All the statistics have been checked by an expert

METHODS OF THE SURVEY

The persons studied are mostly between the ages of 15 and 25 A few children between 12 and 14 are included and a very few adults between 26 and 30 They are divided into five groups (1) "Volunteer controls"—a group of apparently normal healthy office and factory workers, (2) Contacts of cases of pulmonary tuberculosis, (3) Nurses, (4) Medical students (5) Boys entering Royal Naval training establishments A full medical and family history was taken with details of occupation, hours of work, time of travel to work principal recreations place of birth, other places of residence with dates racial history of parents (English Scots, Irish, Welsh Jewish), size of house, size of household with ages, and known contact with tuberculosis This information was given directly or by questionnaire as was convenient Physical examination was normally done only on contacts or if certain abnormal X-ray findings were present

The tuberculin used for the Mantoux test was the International Standard synthetic medium old tuberculin supplied by the Medical Research Council,[1] dilutions in boric acid borate buffer[2] being made monthly from one batch of tuberculin The initial test with 1 10,000 tuberculin was read after 48–72 hours and repeated with dilutions up to 1 100 if necessary Erythema alone was recorded as a "doubtful" reaction, the minimum "positive" reaction being taken as 2 mm of definite œdema with surrounding erythema With the exception of 69 contacts all tuberculin tests referred to below were performed and read by the writer

Full size X ray films were used throughout Most volunteer controls were X rayed by Mr Ferrier, who used the mobile X ray unit of the Joint Red Cross[3] For contacts the ordinary X ray arrangements of the dispensary were used In all other cases the X rays were done by the appropriate hospital or medical school Despite these diverse sources practically every X ray was of good diagnostic quality All films were interpreted by the same committee of radiological consultants appointed by the College

The Mantoux test and the chest X ray were normally repeated annually on each person in the survey to a maximum of five examinations There was a considerable loss of volunteers in every group, postal follow-up being used to maintain contact so far as possible

Volunteer Control Group

704 males and 839 females aged 15–30 were examined in this group They include employees of insurance and other offices, gas companies, the central departments of the Post Office, and other office and factory workers The proportion of factory workers is small That this control group is not representative of London's average population is shown by the very small proportion coming from overcrowded homes, only three of the families being housed at 2 or more per room

Of the males 5 1% gave a negative Mantoux reaction at the first examination, compared with 9 5% of females, and 85 8% reacted to 1 10 000 tuberculin, compared with 80% These sex differences are statistically significant and indicate an excess of positive reaction among the males, which was found also when comparison was made between separate 3-year age-groups

Of the 110 persons, included in the control group, who had migrated to London from the country within ten years of the examination 18% gave a negative Mantoux reaction compared with 7% of those who had lived in the Greater London area for ten years or more a significant excess

The median level of housing in this group came at the low level of 1 2 persons per room Using this value as dividing line, no evidence was found that the group living at higher densities than this included any larger proportion of positive reactors than the group living at lower densities, but rather the reverse

Radiological lesions suggestive of "adult" pulmonary tuberculosis were found in 13 (0 84%) of the 1543 at the first examination, only 2 (0 13%) of these requiring treatment and only 1 having clinical symptoms of the disease Radiological evidence of healed primary infection—that is to say, calcified lung foci, calcified tracheobronchial glands, or both—was found in 110 (or 7 2%) and of these only 2% gave a negative Mantoux reaction compared with 8% of the radiologically normal and 91% reacted to 1 10,000 tuberculin compared with 82% of the radiologically normal Among all positive reactors 5 6% of males showed calcified lesions compared with 9 4% of females a statistically valid difference No conclusive evidence of any association between the incidence of calcified lesions and age was found

The general distribution of Mantoux reactions in 1015 persons in the control group when re-examined after one year was not much different from the distribution at the first examination, though a slight movement towards the positive end of the scale had occurred Among the males who had lived in Greater London for 10 years or more an increase in tuberculin sensitivity

TABLE I—MANTOUX REACTIONS AT FIRST EXAMINATION

Group	—	No examined	MTT + in dilution of 1 10 000 ** (%)		1 1000 (%)	1 100 (%)	MTT ± (%)	MTT – (%)
			** (%)	* (%)				
Controls	M	704	64 (*9 0*)	540 (*76 8*)	23 (*3 2*)	34 (*4 8*)	7 (*1 1*)	36 (*5 1*)
	F	839	69 (*8 2*)	601 (*71 8*)	44 (*5 3*)	29 (*3 4*)	15 (*1 8*)	80 (*9 5*)
	P	1543	133 (*8 6*)	114 (*74 1*)	68 (*4 3*)	63 (*4 2*)	22 (*1 4*)	116 (*7 5*)
Contacts	M	379	56 (*14 8*)	282 (*74 4*)	18 (*4 8*)	9 (*2 4*)	4 (*1 0*)	10 (*2 6*)
	F	405	52 (*12 8*)	297 (*73 3*)	21 (*5 2*)	16 (*4 0*)	5 (*1 2*)	14 (*3 5*)
	P	784	108 (*13 8*)	579 (*73 9*)	39 (*5 0*)	25 (*3 2*)	9 (*1 1*)	24 (*3 0*)
Hospital nurses—Voluntary	F	953	87 (*9 1*)	482 (*50 7*)	105 (*11 0*)	134 (*14 0*)	35 (*3 7*)	110 (*11 5*)
Municipal	F	523	60 (*11 4*)	229 (*43 8*)	37 (*7 1*)	73 (*14 0*)	31 (*5 9*)	93 (*17 8*)
Medical students	M	1106	106 (*9 6*)	627 (*56 7*)	102 (*9 2*)	109 (*9 9*)	38 (*3 4*)	124 (*11 2*)
	F	141	16 (*11 4*)	65 (*46 1*)	14 (*9 9*)	19 (*13 5*)	4 (*2 8*)	23 (*16 3*)
Boys in naval training—Estab I	M	796	34 (*4 3*)	232 (*29 1*)	77 (*9 7*)	153 (*19 3*)	29 (*3 6*)	271 (*34 0*)
Estab II		122	10 (*8 2*)	48 (*39 4*)	7 (*5 7*)	24 (*19 7*)	7 (*5 7*)	26 (*21 3*)

MTT = Mantoux tuberculin test

Reaction ** to 1 10 000 tuberculin is one with a disc of œdema 20 mm or more across The single asterisk denotes any reaction less than this was noted in 17–19% according to age and a decrease in 4–8%, only 1 initially positive reactor becoming negative. Among the females an increase in sensitivity was noted in 15–16% according to age, and a decrease in 14–16%, 14 initially positive reactors becoming negative. Re-examination after 2 and 3 years showed similar results. The number of migrants from the country who were re-examined was not large enough to form any conclusion as to change in sensitivity.

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[1] Douglas S R and Hartley P *Tubercle Lond* 1934 16 105–113
[2] Glenny A T Pope C G and Waddington, H *J Path Bact* 1938 31 133
[3] Ferrier H T *Brit J Radiol* 1934 7, 426

Tuberculosis Contacts

The term "contact" is here taken to mean a person who is or has been in contact, in his home, with a case of pulmonary tuberculosis (not necessarily sputum-positive) but who is not known to have himself suffered from clinical tuberculosis at the time of the first examination. The infecting patient is almost invariably a parent or sibling of the contact, and in some instances has died before the first examination of the contact. Contacts aged 12 to 30 were collected by the tuberculosis officers and health visitors of ten metropolitan boroughs, selected only for their willingness to cooperate.

784 contacts, coming from 442 tuberculous families comprising 2349 persons were examined, 379 being males and 405 females. The examination and Mantoux tests on all except 69 of these were carried out by the Prophit scholar. In 69 cases the tests were done under standard conditions and with standard materials by the tuberculosis officer.

The districts from which they were drawn together formed a fair sample of London as a whole as regards housing and vital statistics. The contacts, when compared with the general population of London, showed a significant excess of families of 5 or more persons. There was, however, no significant difference between them and the London census population of 1931 as regards the proportion housed at 2 or more persons per room. For families of 4 persons there was no difference in the overcrowding rate, and in families of 5 or more persons the contacts appeared to be living in much less crowded conditions than the general population.

The proportion giving a negative Mantoux reaction at first examination was only 3·0%, and was significantly lower than among the volunteer control group for each sex, but the distribution of positive reactors according to the strength of the reaction did not differ significantly from the volunteer control group.

At the initial radiological examination 2·4% showed active pulmonary tuberculosis, 2·5% parenchymatous lesions considered to be quiescent, and 17·2% calcified lung nodules, calcified tracheobronchial glands or both. The incidence of healed primary lesions was not significantly different in separate 3-year age-groups of contacts.

TABLE II—PRINCIPAL RADIOLOGICAL FINDINGS AT FIRST EXAMINATION

Group	—	No examined	Healed primary lesions (%)	Inactive pulmonary tuberculosis (%)	Active P.T requiring treatment (%)
Controls	M	704	38 *(5·4)*	5 *(0·8)*	1 *(0·14)*
	F	839	72 *(8·6)*	6 *(0·7)*	1 *(0·12)*
	P	1543	110 *(7·2)*	11 *(0·71)*	2 *(0·13)*
Contacts	M	379	58 *(15·3)*	8 *(2·1)*	7 *(1·8)*
	F	405	77 *(19·0)*	12 *(3·0)*	12 *(3·0)*
	P	784	135 *(17·2)*	20 *(2·5)*	19 *(2·4)*
Hospital nurses—					
Voluntary	F	953	57 *(5·9)*	4 *(0·4)*	0
Municipal	F	523	41 *(7·8)*	2 *(0·4)*	2 *(0·4)*
Medical students	M	1106	56 *(5·1)*	1 *(0·09)*	0
	F	141	10 *(7·1)*	1 *(0·7)*	0
Boys in naval training—					
Estab I	M	796	39 *(4·9)*	0	2 *(0·25)*
Estab II	M	122	5 *(4·0)*	1 *(0·8)*	0

Column 4. *Healed Primary Lesions* mean calcified nodules in lung, calcified hilar glands visible in X ray film and present separately or together.

Column 5. *Inactive Pulmonary Tuberculosis* means tuberculous infiltration of lung parenchyma not found to require treatment at the time of diagnosis.

On re-examination of 253 contacts after the lapse of one year, an increase in sensitivity to tuberculin was noted in 22% compared with 17% in the control group, the excess being twice its standard error. A decrease in sensitivity was found in 9% compared with 11% in the control group.

The outstanding practical feature of the examination of contacts is the high incidence of active pulmonary tuberculosis revealed. No active lesions were found in the 180 contacts aged 12–14 nor were any healed parenchymatous lesions (as distinct from calcified nodules and glands) found in this subgroup. The incidence of active pulmonary tuberculosis in male and female contacts aged 15–30 was thus 2·4% and 3·9%, plus 2·7% and 3·9% respectively of healed parenchymatous lesions. The value of at least one X-ray film of adolescent and young adult contacts is thus clear, and it is hoped in a future communication to show that repeated annual X-ray examination is no less important.

Hospital Nurses

These were drawn from five large voluntary teaching hospitals and five large general hospitals under the control of a local authority. In nearly all cases the initial X-ray and Mantoux test were carried out while the probationer was still in the preliminary training school so that the figures give a fair picture of conditions at the start of training. The voluntary and municipal groups of hospitals differ in the degree of known contact with tuberculosis which they afford their nurses. The former admit pulmonary tuberculosis patients only in small numbers, either undiagnosed, or after acute emergencies such as hæmoptysis, or for teaching purposes. The municipal hospitals, up to the outbreak of war, practically all had large tuberculosis wards acting as reservoirs for the sanatoria and as asylums for advanced and dying cases.

953 nurses in voluntary hospitals were examined, of whom 63·2% were English, 7·7% were Irish, 5·3% Welsh, 3·1% Scots and 20·7% of mixed parentage. 523 nurses in municipal hospitals were examined, of whom 43·6% were English, 33·1% were Irish, 10·7% Welsh, 4·4% Scots and 8·2% of mixed parentage. There was considerable excess of Irish and Welsh in the municipal group compared with the voluntary hospital group.

Of the entrants to voluntary hospitals 11·5% gave a negative Mantoux reaction when first tested, the proportions not being significantly different from those for the female control group of the same ages. Of the entrants to municipal hospitals 17·8% were Mantoux negative when first tested, a significantly higher proportion than among either the control group or the voluntary hospital nurses. In each group of nurses a lower proportion reacted to 1:10,000 tuberculin and a higher proportion to 1:1000 or 1:100 than amongst the control group, this being true at all ages and at ages 18–21.

Comparison of the Irish municipal hospital nurses with other nurses in the same hospitals revealed a significant excess of negative reactors, the rate being 25% in the Irish nurses. The other municipal hospital nurses included 14% with negative reactions compared with 9% among the control group, an excess very probably significant (2·6 times the standard error) and perhaps due to the higher proportion of Welsh and other than English nurses included.

The voluntary hospital nurses showed on radiological examination 5·9% with calcified lesions compared with 8·5% of the female control group, this difference being of doubtful significance. The municipal hospital nurses showed no difference from the control group in this respect. No case of active pulmonary tuberculosis was found in the group of voluntary hospital nurses, in which 0·4% of healed parenchymatous lung lesions was found. The municipal hospital nurses showed 0·4% of active tuberculosis and 0·4% of healed parenchymatous lesions.

The proportion of municipal hospital nurses initially negative to tuberculin who after a year in hospital gave a positive reaction was 78%, a significantly greater change than among voluntary hospital nurses (42%), or female controls (22%). Only 1 out of 156 initially positive reactors became negative instead of 4 expected from the control group. Doubtful reactors tended to become positive rather than negative after a year in hospital. Strongly positive reactions became weaker less frequently than amongst the voluntary hospital nurses or controls, and weak positive reactions tended to become stronger more frequently in the municipal group Only one nurse was found to remain negative to tuberculin after three years in a municipal hospital

Medical Students

1247 preclinical medical students were examined, 1106 being males and 141 females They were recruited from seven medical schools of the university of London and from three provincial universities The methods of examination were the same as those used in all other groups and the initial Mantoux test and X ray were carried out in the preclinical period

Male students at ages under 21 numbering 806, included 11 9% of negative Mantoux reactors compared with 5 0% among male controls of similar ages, male students of age 21 and over, numbering 300, included 9 3% of negative reactors compared with 3 2% among male controls of corresponding age In each case the excess of negative reactors was 4 times the standard error and therefore significant The proportion of reactors to 1 10 000 tuberculin were much below, and the proportion of reactors to 1 1000 were above the corresponding proportions in the male control group at both ages The proportion of weak reactors (positive to 1 100 tuberculin) was above the control figure at ages under 21

The comparison establishes the fact that preclinical male medical students are less often and less strongly tuberculin positive than London controls of similar age This was also true of female medical students with respect to the strength of positive reaction and probably also with respect to the frequency of any kind of positive reaction

No case of pulmonary tuberculosis requiring treatment was found at the first examination The incidence of radiological lesions in males was otherwise similar to that in the control group at the same ages Calcified "primary" lesions occurred in 1 7% and 6 1% respectively of students under and over age 21

Re examination after one year of 192 students initially positive to tuberculin showed an increase in sensitivity in 29% and a decrease in 13%, including 2% whose reactions became negative Of 61 initially negative to tuberculin only 33 remained negative after a year, and of 38 retested after two years 15 remained negative The proportion registering an increase in sensitivity was significantly greater than amongst male controls coming from towns (14%) but was the same as that found amongst voluntary hospital nurses

Boys in Naval Training

Two Royal Naval training establishments were included in the survey The first gave a period of about one year's general training to a comparatively large number of boys, the second a period of about four years training in engineering subjects to a relatively small number of boys selected by competitive examination 796 boys aged 15–16 entering the first and 122 entering the second establishment were examined Of the former group 32% came from the country or from small towns of less than 8000 population

In the first establishment the proportion of Mantoux negative reactors was 34% Of those coming from the country or from small towns 40% were Mantoux negative, of those from larger towns 31% were Mantoux negative Boys entering the second establishment showed 21 3% of negative reactors A group of 66 London boy controls of similar age showed 12% of negative reactors

The frequency of radiological lesions was not significantly different from that in the small London control group No tendency for tuberculin *sensitivity* to increase in any way comparable with that found in the hospital groups was found on re-examination after one year

In relation to the rest of the survey, this group of boys is chiefly of interest in so far as it gives an idea of the apparently much lower level of tuberculin sensitivity (and presumably of tuberculous infection) existing in rural districts as compared with London

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The routine work of the survey was stopped during the period of disorganisation immediately after the outbreak of war and was resumed in March, 1940, with certain unavoidable modifications Work on the volunteer control group has become almost impossible since many volunteers have been transferred to districts remote from London while many others have joined the Services Alterations in the working hours of tuberculosis dispensaries have seriously interfered with the examination of contacts Changes in the distribution of medical students have increased the difficulties of routine work in this group, although examinations are being continued so far as possible

Reorganisation of the London hospitals has abolished the clear distinction between nurses in voluntary hospitals and those in municipal hospitals The value of the survey in this group has, however, become more widely recognised and opportunities for expansion have been offered far in advance of those available before the war A large increase has already taken place in the number of nurses under observation and results obtained so far suggest that the survey may eventually add substantially to our knowledge of the epidemiology of tuberculosis among nurses

Wherever full re-examination is impossible the attempt to maintain contact with volunteers through a postal follow-up is being continued

RADIOLOGICAL CHANGES DURING OBSERVATION

One of the most important parts of the survey is the assessment of the rate at which pulmonary tuberculosis develops in the different groups of persons originally free from the disease, and of the factors which lead to the development of lesions Between 1931 and 1939 many such cases were observed especially in the contact group These radiological changes were analysed in some detail in the original report, and figures were prepared showing the rate of development of pulmonary lesions per thousand person-years of observation in the various groups in the period Sept 1931 to Aug 1939 During the first year of the war many more cases of phthisis were recorded and it became clear that more reliable conclusions would be reached by extending the period of observation There was moreover an increasing suggestion of a useful correlation between the tuberculin reactions and the rate of development of tuberculous lesions For this reason it was considered wise to defer publication of figures on these points until the position became clearer, and it is hoped to publish a further report later One point is clear In the contact group, after those suffering from pulmonary tuberculosis on first examination have been excluded, the remainder, originally free from disease develop pulmonary tuberculosis at a steady rate which seems to lie between two and three per cent per annum The value of repeated annual review by X ray of contacts over age 15 and originally X-ray negative is thus very great, especially as the cases so discovered usually carry an excellent prognosis

The organisation and field work of this survey could not be carried on without the help of many persons whom it is impossible to single out for individual thanks I wish, however, to express my gratitude to the Prophit Tuberculosis Survey Committee of the Royal College of Physicians for their wise guidance and for permission to publish this summary

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SCOTLAND

HOSPITAL CONTRIBUTORY SCHEMES

THE British Hospitals Association with sassenach modesty disclaims any wish to interfere with purely Scottish affairs, but it has gently reminded the Scots that it might be unwise to assume that what concerns Scotland cannot in any circumstances concern the rest of Britain, and that cooperation between the Scottish and English bodies interested in the future of voluntary hospitals is important At the annual meeting in Glasgow of the Scottish branch of the association the representatives agreed that they must stop swithering and make up their minds about contributory schemes, and Mr J D Wyllie of Kilmarnock moved a resolution in favour of their institution and suggested consultation between the different interests involved with a view to setting up reciprocal and as far as possible, uniform schemes Scotland's experience of them has so far been limited but successful and Mr Wyllie pointed out that an extension of national health insurance to include hospital treatment as a statutory benefit would mean their death He thought also that the independence of the hospitals would be affected if the money came from the state, while contributory schemes did not affect hospital self-government nor risk losing voluntary donations Dr David McKail of Glasgow protested that the people of Scotland were unfamiliar with the details of these schemes and he objected to being rushed He did not see how they could escape from a whole-time service with adequately paid medical officers The resolution was, however, approved by a large majority

PROFITING BY EXPERIENCE

Our two chief protections against ship-borne smallpox are vaccination and the surveillance of passengers and crew where a case has occurred War conditions have increased the risk and have made the surveillance of suspects more difficult, and Sir Alexander Macgregor in his report of the recent Glasgow epidemic thinks that the lesson we should learn from it is the adoption of immigrant vaccination as a routine precaution The story of the Glasgow epidemic, he points out, would probably have been different if all susceptible members of the crew and passengers had been quietly vaccinated when the ship left Bombay—a port which was known to be infected Sir Alexander draws a striking parallel with the epidemic of 1929 when the ss *Tuscania* landed a confluent case of smallpox at Marseilles and 13 of the crew and a considerable number of the passengers contracted the disease in this country After this hint the shipping companies trading with the East wisely took the precaution of paying stricter attention to the vaccination of their crews with such good results that it was possible to close the Glasgow smallpox hospital with the exception of two wards reserved for emergencies Today it is imperative that we should do everything to prevent the access of infection to this country and Sir Alexander accordingly urges that vaccination should be made a condition of travel for all passengers sailing to this country from eastern ports who have not been recently protected He is confident that members of the Merchant Navy would be willing to be vaccinated from time to time if the reason for the precaution was explained to them

RUSSIAN CONFERENCE

THE Institute of Experimental Medicine of the USSR met recently to discuss some of the practical and immediate scientific problems which have for the time superseded more theoretical studies A report of their discussion, cabled to this country by Professor GRASHCHENKOV of the Moscow Neurological Clinic, is full of stimulating information but is tantalising too, because it was naturally impossible in a cable to go into detail about the many promising lines of research now being pursued by Russian scientists He reports that in the past six months the clinic, working in collaboration with a mobile field hospital specially staffed and equipped for neurological work, had treated 600 compound wounds of the head Workers there have been much impressed with the value of sulphonamides, and have used sulphanilamide, sulphapyridine and sulphathiazole in proportions varying with the organisms found on wound culture Professor LURIA, at a branch clinic of the institute, is studying the treatment of aphasia and other focal brain lesions Professor KUPALOV, a pupil of Pavlov, finds that injury at the highest brain level interferes with the synthetic action of large areas of cortex, producing torpor and neurotic symptoms Another pupil of Pavlov, Professor ROSENTHAL reported his studies on the elaboration of temporary conditioned reflexes in those with brain injuries, he assesses the initial degree of disturbance of cortical processes, and then tries to estimate—from the speed with which the patient acquires a conditioned reflex—what degree of recovery of function may be expected Other members of Pavlov's laboratory have found that long periods of drug-induced sleep are particularly useful for cases of cerebral contusion

NERVE REGENERATION

Regeneration of peripheral nerves has been studied by Professor LAVRENTJEV, he has used fixed pieces of nerve and spinal cord as transplants for bridging gaps in nerves, and finds he gets his best results with formalinised nerve because it acquires blood-vessels quickly and also delays the proliferation of connective tissue and fibrous elements in the scar Heat was the only thing which seemed to hasten nerve regeneration He suggests ligating the vessels of a nerve as a method of preventing the outgrowth of nerve-fibres and the formation of neuromas Professor MAGNITSKY presented a study of the chronaxie of peripheral nerve after full and partial disturbance of its functions Professor OREKHOVICH has studied the metabolism of degenerating and regenerating nerves and finds special histolytic enzymes at work during regeneration

TYPHUS

Work on the specific prevention and early diagnosis of typhus of the classical louse-borne type has been carried out at the laboratory of Professor SMORODINTSEV Discussing this, Dr LEVKOVICH said that for the first time it had been possible to carry out, in an epidemic area, a large scale investigation of a vaccine prepared at the All-Union Institute of Experimental Medicine according to a modification of the Weigl technique The original Weigl vaccine, it will be recalled, was prepared from the intestines of infected lice Cox vaccine was also tested under epidemic conditions, this has been supplied by the representatives of the American Red Cross and was prepared from growths of *Rickettsia prowazeki* in the yolk sacs of developing fowl embryos and treated with phenol and formalin In animal experiments these vaccines were compared with the Durand-Sparrow vaccine made from the lungs of infected laboratory animals The Cox vaccine was shown to be the most effective of the three and the simplest to prepare In the same laboratory the early diagnosis of typhus was studied by means of a complement-fixation test carried out at low temperature The reaction is said to be sensitive and strictly specific, giving positive results as early as the first or second day of illness—a highly important finding It will be recalled that I A Bengtson[1] in America has obtained positive results in endemic flea-borne typhus with a complement-fixation test in which she used as an antigen a suspension of rickettsias, the reaction was positive six or seven days after the onset and followed a course similar to that of the Weil-Felix reaction A somewhat similar result was obtained in Q fever[2] but these reactions were carried out at 37° C The earlier positive results in the Russian work are presumably due to the low temperature These findings recall the work of R L Kahn,[3] who has found that the reaction bearing his name is intensified if carried out at 1° C, but he considers that such strong reactions at low temperatures are of "general biological" rather than syphilitic type A fuller account of the Russian work should be keenly interesting

INSECTICIDES

Professor PETRISHCHEVA has devised ways to make insecticides from waste and cheap half-processed chemical by-products and from wild plants Nearly 150 types of plant with insecticidal powers have been found in one of the Siberian regions, and several of the substances isolated have been tested against lice, they have proved effective for the disinfestation of clothing and vehicles, including railway carriages Rossisky[4] has published an account of the use of 'Nassecamoyad,' a 10% solution of kerosene-carbolic soap, and also of 'Solvent,' a product retaining the highest homologues of benzol and toluol prepared by fractional distillation He finds that nassecamoyad kills lice quickly without irritating the skin, and its protective action lasts 2–4 days The fumes of solvent destroy lice in 9–12 minutes, this substance too is harmless to human skin Heat treatment of clothing, though doubtless used, has not been mentioned lately by Russian workers, their attention having been directed towards the preparation of efficient insecticides Chasovnikov[5] has written of the use of solvent in the field

BACTERICIDAL STUDIES

Professor YERMOLEVA discussed the use of lytic agents in intestinal disease Good results are reported from the use of small amounts of 'Sulphadine' during phage treatment Bacteriophage has, of course, been used in bacillary dysentery for many years, notably by A Compton[6] in Alexandria Sulphadine treatment has been described by Bobrovolskaia,[7] who gave it first to children suffering from dysentery complicated by pneumonia. It benefited both conditions and this led him to use it in uncomplicated cases of dysentery with excellent results The dosage used was small, not more than 0 7 g a day, with an average total dose of 1 1 g In other countries sulphapyridine, sulphathiazole and especially sulphaguanidine have been used with success in bacillary dysentery but in larger doses than those quoted for sulphadine Professor TOKIN as a result of ten years research has been able to establish that many plants have bactericidal properties, especially ordinary onion, garlic, radish and probably citrus plants Exposure for 5, and in some cases 3, minutes to the vapour of these plants is said to inhibit and sometimes kill such organisms as streptococci, staphylococci and intestinal bacteria

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[1] *Publ Hlth Rep Wash* 1941 56 649

[2] *Ibid* p 327

[3] *Arch Derm Syph N Y* 1940, 41 817

[4] *Soviet Med* 1940, No 3

[5] *Ibid*, 1940, No 9

In England Now

A Running Commentary by Peripatetic Correspondents

ON April 4 I set out westwards from Kweiyang in West China with seven companions, one a doctor, and one our unqualified anæsthetist We had a supply lorry and our two special vehicles—the mobile operating-theatre and the mobile X-ray department On our journey over the Burma Road we visited several hospitals and were able to do some X-ray examinations for which missionaries had long been waiting At Hsiakwan we were held up by trouble with our supply lorry, and I had several glorious days on Hsiakwan mountain, where I made one ascent almost to the snow, reaching 11,000 ft The many kinds of rhododendron were wonderful

When we came to the Yunnan-Burma frontier at Wanting on April 22, there was an air-raid alarm in progress, and we crossed into Burma without having to stop or show papers to anyone The frontier was not well marked, and even though in Burma, we seemed for practical purposes to be still in China In Lashio we heard that a Japanese drive northwards from the South Shan states was seriously threatening the town and the road from Lashio to Mandalay We still had time to get through, but we realised that the road would almost certainly be cut behind us This would probably mean that our expensive vehicles would have to be abandoned, even though we might be able to get away on foot We were at this time taking our instructions from American Army HQ We asked the senior American Army officers in Lashio whether we should go on or not They said we had a chance of doing a good job of work if we did So being keener ourselves on going forward rather than back, we decided to take only one supply lorry and to send our valuable equipment back towards China We set out in the early hours of Sunday morning and drove down to Maymyo Shortly after this the Japanese reached the road and spread along it, taking Lashio and then spreading rapidly northwards so that they reached Myitkyina, in the north of Burma, in an incredibly short time

Maymyo, normally a fashionable hill resort much frequented by society, we found deserted We were given tea at a house, and were invited to take away anything we liked If we had had the means to carry them we could have brought away a marvellous collection of strange things The civil hospital was in the process of packing up, and here again we could help ourselves to anything we liked if we felt so disposed From Maymyo we went on the same day through the ruins of Mandalay without stopping, and then across the great Ava bridge, blown up a few days later, which took us to Sagaing, on the west side of the Irrawaddy. Here we found accommodation for ourselves in the hospital The town was pretty well deserted, and there was no buying or selling Soon after we left Sagaing next morning we saw it being bombed and partly set on fire

We moved that day to near Shwebo, and so fell in with Major Seagrave and his surgical unit He is an American missionary doctor, now acting as a surgeon in the U S army We stayed in the same Burmese house with his unit After about three days there we were told to add ourselves to what was called a staging section in the British Army This is a medical unit which gives minor treatment to wounded and sick soldiers in transit We reported to No 2 staging section, which was a small unit sitting about in a field where shade was hard to find Shortly after arrival we heard a formation of Japanese bombers coming over, and then began the unpleasant noise of bombs falling rapidly We mostly lay on the ground under the lorry, and soon it was over and we realised that we were all there and unharmed But some men about 150 yards away had not been so lucky, and about 25 casualties were brought to us Then followed a period of intense "blood, tears, toil and sweat," and that night ambulances took our patients away I am afraid some of them had a bad time in transit, and some died who should have lived That evening, having had news of enemy movements, we went on late into the night following a narrow road through dense jungle

Sometimes the road surface was very bad and there were hair-pin bends so acute that the lorry had to go alternately backwards and forwards in the descent The jungle looked glorious to wander in, but we had to keep moving, and there was no opportunity for catching butterflies or picking flowers Next day the road conditions became almost impossible We had to cross dozens of wide dry waterways—or rather there were waterways which were so serpentine in their course that our route crossed the same one repeatedly These were dry and sandy, and over and over again the lorry sank Sometimes we had to cut down branches from trees and stack them in front of the wheels to let them get a grip on the loose sand Vehicles were abandoned at these crossings, and several times we thought our motoring must end Twice we gave our lorry up as lost and began to unpack the more valuable part of our equipment, but thanks to the Army we got through at last, and after doing a lot of hard work on the way our old lorry has now safely reached Calcutta, where it is undergoing a well-earned rest and overhaul This lorry incidentally had an interesting history Originally it was "rescued" by the Friends Ambulance Unit in Rangoon dockyard just before the Japanese arrived Its bodywork was never completed, but in spite of this it was used on battlefields south of Mandalay, later going up to the Chinese frontier, and after this making the long and difficult journey across Burma, Manipur, Assam and Bengal to Calcutta

Next day we reached Shwegu, on the east side of the Chindwin river Here I had the good fortune to see a pair of "paradise flycatchers," really lovely little birds, black and white, with an enormously long tail several times the length of the body The Chindwin was lovely as we travelled up-stream on its broad waters, between hilly, jungle-covered banks and it was easy to ignore the countless rumours, which mostly turned out to be fallacious anyway

At Kalewa, the civil hospital and all its equipment was handed over to me Here we had a lot of casualties to deal with We soon moved out from the hospital, which was too near the town to be safe, and opened up the local monastery as a hospital Here we did some operating Later the RAMC took this place over and we moved on

We borrowed an old Ford lorry, and kept this and our Chevrolet working hard carrying wounded and civilian evacuees towards India and peace All this time everything was tense and unnatural There were no shops, no normal living conditions The only people we saw were army units and the tragic hordes of Indian evacuees The Indians were imported into Burma by the British because the Burmans could not be made to work With the exit of the British the Indians came too, because apart from British control they could not live in harmony with the Burmese They were a pathetic sight, and when the lorry was so packed that it was impossible to wedge in anyone else it was difficult to deal with the old men and women and mothers with babies who knelt on the ground to implore for help on their long and weary march In one camp where we spent a few days a baby was born, its mother went on next morning Here, also, we received a two-day-old baby which had been found lying by its mother's corpse at the deserted civilian hospital We gave it to a native VAD who was doing splendid work looking after British and Indian wounded. Here at Tamu I met three men I had known at Thomas's, and one who had been at St Paul's School, and just missed D A Patterson, an old schoolfellow. He is a padre, and was at Shwebo just before we went there.

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[6] *Brit med J* 1942 i, 719
[7] *Soviet Vrachebny J* April, 1941, p 277

After Tamu we followed a mountainous road over the Chin hills, and so came to Imphal, the capital of Manipur state. Here there had been one air-raid, and the civil population had left the town and not returned. There was not even anyone to remove the corpses decomposing in the streets—incidentally we did a fair amount of undertaker's work in Burma. At Dimapur we were entertained and well fed at the rest camp. The Army then gave us, including the lorry, free passes, so a few days later all our equipment, not to mention our personnel, completed the trip and landed in Calcutta.

H T L

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It cannot often fall to the lot of a reviewer to discuss the first edition of a book and then, after an interval of a quarter of a century, to be asked to review the second edition. And when the work happens to be D'Arcy Thompson's *On Growth and Form*[1]—as I sincerely believe, the greatest contribution to biological science made in our generation—the privilege is of an altogether unusual kind. The first edition wandered with me everywhere; the binding was nibbled by silver fish in Australia and by cockroaches in Hawaii. The passage of twenty-five years has in no whit diminished the pure intellectual joy imparted by its reading. No brief account of the work can make real the beauty of the language, the profundity of the scholarship, or the perfectly rounded and patinated maturity of the whole thing. His father's *Daydreams of a Schoolmaster*, a real classical scholarship, a lifelong study of biology and an aptitude for mathematics are some of the factors that go to its making, but to all this there must be added that serenity of judicial outlook that refuses to be attracted by the new merely by reason of its novelty. As I re-read the old matter in the book and delighted in the new, I felt that its reading should be made compulsory for every one of the younger men who are today suffering, as perhaps never before, from a lack of historical background in the biological sciences. By them it should be read as a monumental example of the fact that the best scientific work can still be best presented without any distortion of the beauties of the English language. It should be read as an outstanding lesson in the exercise of mature and intellectual honesty of judgment and of restraint in dealing with certain fashionable doctrines. Indeed, there are occasions in which restraint has gone almost too far. There is much that is tantalising in the statement "and I leave this great subject on one side not because I doubt for a moment the facts nor dispute the hypotheses nor decry the importance of one or the other but because we are so much in the dark." One is left with the feeling that if that darkness is to be illuminated the author is likely to have a suggestion as to whence the light will come. Again, with shrinkage forms, enough has been told to make us realise the vast importance of the subject. The author says "The subject is new and hardly ripe for full discussion but it holds our promise." That is easy to realise. Will the promise be fulfilled? Shall we ever have the full discussion? The two editions of this book have been written during two wars. The scholarship that has gone to its making transcends all war and the reading of the whole thing makes war more remote—yet far more beastly in contemplation. We cannot await another war to usher in the dawn of a third edition in which some of our curiosity on shrinkage and many other things may be satisfied. Meanwhile we can only rejoice that there is still among us the master who can lead us through that strange world in which physical forces and chemical reactions play their parts as determinants of living form, and, by reason of the beauty of his diction, do it so that no part of the journey is dull or difficult to follow.

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In 1928 a lady had a gastric ulcer. While she was in hospital, her physician looked at a laboratory report and said to the nurse, "There's occult blood too." The lady decided that they both looked very grave, and when she asked the nurse what it was all about the nurse refused to tell her. A year later she pursued her investigations further, when again under treatment. This time some one told her that occult blood meant that there was a minute amount of bleeding from somewhere in her inside; she repeated this explanation to two nurses, who dissolved, for some reason best known to themselves, into fits of laughter. Her ulcer was healed, but the worry remained. The other day, reading one of the *Daily Mirror* articles about venereal disease, the explanation flashed into her worried mind. She had VD. There is a moral here somewhere and it is obscurely connected with the moral of your story in "Three-in-One Doctor" (Oct 3, p 402), but both take a bit of drawing.

Letters to the Editor

THE CHRISTMAS GIFT

SIR,—It is always with a feeling of hesitation, perhaps of fear, that I address this letter to you at this time of the year; hesitation and fear lest I should fail to state the cause effectively to your readers. But in my 25th year of office as president of the Royal Medical Benevolent Fund and as an old man myself, may I once more appeal on behalf of old doctors and their loved ones that the Christmas Gifts fund be continued in 1942. A gift of £2 to each of our beneficiaries on Christmas Day to bring some comfort, perhaps warmth or an unaccustomed enjoyment to homes where every penny has to be considered, is my desire. Will all friends who have helped me in the past do what they can again this year, and will others come forward as contributors to take the place of those who have had to drop out.

All contributions should be addressed to the hon. treasurer, Royal Medical Benevolent Fund, 1, Balliol House, Manor Fields, London, S.W.15, and cheques should be made payable to the "Christmas Gifts Fund."

THOS BARLOW,
President, RMBF.

CERTIFICATION OF DEATH IN INFANCY

SIR,—Dr Miller's article is of great interest to those who are not satisfied with our infant mortality rates. It was shown by the Registrar-General in his 1934 and 1937 reviews that the rates of England and Wales compared unfavourably with the national rates in Norway, Sweden or Holland. It has long been realised that certification of the causes of death of young infants leaves much to be desired, and the Newcastle Health Department is rendering useful service in persistently calling attention to it. Much light has been thrown, however, both upon the causes of neo-natal deaths and upon the possibilities of reducing them by the Chicago work, and conditions in that city are not very different from those in our own towns. In view of this work and the Ministry of Health's investigation in Holland before the war, we are not entirely ignorant about the reasons for the retarded improvement in our own country. But it is useless to press for reforms unless we are sure that they are likely to help towards the desired result, and some of Dr Miller's suggestions seem to require examination on that and other grounds. He recommends that a mechanism might be provided which would enable a doctor, in cases which do not require notification to the coroner, to indicate that he does not know the cause of death, so that he can obtain an autopsy before giving a final certificate. There is some confusion here, for, if the doctor does not know the cause, the death is one which *should* be notified to the coroner, the registrar being instructed to notify any death "the cause of which appears to be unknown." A mechanism to enable the doctor to obtain an autopsy in such cases is already in existence. If the doctor informs the registrar that he is uncertain about the morbid condition which caused death, the coroner will be notified and can order an autopsy without inquest if he is satisfied that death was from natural causes. There is no other means of enforcing an autopsy, and Dr Miller has made out no case for alteration of the law in this respect. In 15% of the infant deaths studied the investigators at Newcastle could not discover a cause, but we are left to surmise that, instead of using the mechanism outlined above, the certifiers had preferred in most instances to write down on the certificate what they considered to be the most likely cause. In another fraction of about the same size the investigators differed from the certifier as to the cause, and considered that injury at birth was often certified otherwise. They also concluded that prematurity and gastro-enteritis were over-certified. There seems to be a common idea that to write injury at birth on a death certificate will mean an inquest, but 1933 statistics showed that inquests had been held on only 6·3% of deaths classed to that cause, whilst in 3% the coroner had ordered an autopsy without inquest, in 1·1% no certificate had been given and in the remaining 89% the coroner had accepted the certificate. The chance that such an entry will lead to an inquest is, therefore, a small one.

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[1] Cambridge University Press. Pp 116. 50s.

The way to ensure reliable national statistics of infant deaths is to use the machinery in existence in order to obtain an autopsy in every case of serious doubt. This is a difficult path to follow, but certifiers must decide whether the other considerations which press upon them in such cases are to be allowed to retard progress towards knowledge and towards the discovery of means of preventing such deaths in the future. The most recent figures available (Registrar-General's Review for 1933, pp. 145–157) show that in London the percentages of infant deaths certified after autopsy without inquest were much greater than in the rest of the country. Dr. Miller also recommends revision of the International List of causes of infant deaths by a committee of clinical pediatricians. The list was carefully revised in 1938 by committees including such specialists both in this country and in America, and it will normally be revised again in 1948. Although your editorial states that "Miller shows good cause indeed for a revision of classification," I do not think that he himself will claim that he has advanced cogent arguments for an immediate revision. The main fault found is that inquiries are not sent by the Registrar-General asking for more information when certain causes, notably prematurity, are certified. But if an infant aged 1 or 2 months is stated to have died of prematurity alone the inquiry would have to be whether there was any other cause not mentioned on the certificate which the certifier considered to be *more important* in causing death than prematurity. If an associated morbid condition was not considered more important, the classification of the death would not be affected by mentioning it; consequently the certifier would in fact be asked whether he had omitted what he considered to be the most important cause and entered only a subsidiary one. Apart from the natural annoyance engendered by such a question, would accuracy be appreciably advanced thereby? To inquire more often of the certifier about infant deaths where there was no autopsy would be unlikely, in my opinion, to add much to our knowledge at present.

Dr. Miller's first two recommendations deal with methods of informing the medical profession more fully on the importance of accurate death certification, and on this general question I would point out that the book of medical certificates does contain notes and suggestions which supply a good deal of the desired information. He recommends that a special form of death certificate for infants, including information about birth-weight, feeding and position of child in family should be introduced. Birth-weight and feeding cannot be usefully studied apart from many other factors, such as heredity, social position, mother's health and occupation and so forth, and the registrar would not be in a position to ask the questions necessary. These matters would surely be much better investigated *ad hoc* in a few areas than by attempting to amass national statistics, even if the administrative difficulties could be overcome.

Southport. PERCY STOCKS.

ANÆMIA IN PREGNANCY

SIR,—Your leader of Sept. 19 seems to take at their face value the figures given by Hamilton and Wright in their paper on the value of the administration of iron to pregnant women. Their two groups treated with iron and untreated each numbered 196 and had initial hæmoglobin levels of 75% and 79% respectively. If these two groups of pregnant women were samples of the same population, this difference in the average hæmoglobin level of the two groups must mean that the standard deviation of the population is at least 18. Such a standard deviation means that the final hæmoglobin levels of the two groups, 77% for the treated and 70% for the untreated, is likely to occur by chance, so that it is improper to conclude that iron had any effect on the hæmoglobin level at all. It is of course improbable that the standard deviation of the initial hæmoglobin of 100 pregnant women is as much as 18. The difference between the average initial hæmoglobin of the two groups may very well be due to the unfortunate planning of the investigation. The untreated group was seen on one day of the week, the treated on another, so that whoever estimated the hæmoglobin was bound to be biased unconsciously by knowing to which group any individual estimation belonged. This regrettable fact and the statistical argument given above make Hamilton and Wright's figures an uncertain basis from which to draw any conclusions about the value of iron administration to pregnant women. This argument, of course, does not prove that iron administration is valueless, but it would be a pity to force every pregnant woman to take an indigestible and tooth-blackening medicine for several months all to no purpose, and to use these figures to recommend the fortification of bread with iron.

What is striking, however, is that iron treatment had such a *small* effect on women with such comparatively low hæmoglobin values. Fullerton found some years ago that iron treatment brought the hæmoglobin level of pregnant women at term to a figure about 13% above the untreated figure of 75% (estimated by the same method as Hamilton and Wright and with apparatus apparently calibrated to the same 100%) in spite of the poorer economic status of his patients. This suggests that it was not really a low iron intake which determined the low hæmoglobin of the war-time patients but a war-time deficiency of some factor concerned in iron utilisation. Evidence has recently been presented that vitamin C conditions the utilisation of liver in pernicious anæmia (*Lancet*, 1942, ii, 278), and it is well known that iron treatment is useless in the iron-deficiency anæmia of scurvy unless vitamin C is given as well. It is a general experience in this country that plasma vitamin C levels are now much less than they were in peace time. Would Hamilton and Wright consider it worth while to continue their observations by estimating the value of supplementary vitamin C in raising the hæmoglobin of pregnant women?

Oxford. R. H. MOLL.

TUBERCLE FOR TUBERCULOSIS

SIR,—It is with considerable misgiving that I have been noting the use in your annotations and leading articles of the word tubercle when tuberculosis is meant. And I see that the *Times*, following in your footsteps, published a leader last week entitled Treatment of Tubercle. Tubercle in the place of tuberculosis has been used colloquially by some tuberculosis workers for a long time, but on the whole its use has been frowned upon, and one certainly seems to hear it less and less. Is there any justification for its use in print apart from this? The lay public, I feel sure, knows tuberculosis much better than tubercle, and probably also spells it more correctly in spite of its greater length. And in foreign languages we certainly find no corresponding use of another word in place of (Fr.) *tuberculose*, (Ger.) *Tuberkulose*, &c. THE LANCET has been looked up to for many years as a champion of jargon eliminators. Hence its failure—if such it is—in respect of "tubercle" is all the more noticeable.

Staines, Msx. G. GREGORY KAYNE.

*** My predecessor James Wakley, who was something of a purist, wrote on the announcement of Koch's discovery—"But the organism of tubercle has hitherto eluded research" (*Lancet*, 1882, i, 655). And later in that same year Prof. Wm. Pirrie of Aberdeen entitled an address "the Infectiveness of Tubercle" (*Ibid*, 1882, ii, 171).—ED. L.

HERNIOPLASTY

SIR,—Squadron-Leader Arthur in his interesting article on the treatment of inguinal hernia in the R.A.F. does not discuss the recurrence rate following the modification of McArthur's hernioplasty he describes. My former chief, Prof. P. P. Debono, has been using an almost identical modification at the Central Civil Hospital, Malta, for over fourteen years and the number of cases he has done must amount to several hundred. As far as I am aware neither the technique nor the end-results have ever been published, and up to the beginning of the war the statistics had not been collected. However, I believe I am correct in saying that it is Professor Debono's impression that the recurrence rate is very low indeed He does not use fascial grafts as a routine but only in selected cases and he has devised a useful fascia carrier faintly resembling a Reverdin suture carrier For some time I have been using the same technique with the difference that I use silk or cotton instead of catgut So far the results have been gratifying

London, E 1 A J CRAIG

Obituary

JOHN WALTER CARR

C B E, M D LOND, F R C P & S

Walter Carr, who died on Sept 29, at the age of 80, belonged to a generation of physicians, now almost extinct, who took an interest in all departments of pure medicine He was fellow of both the senior colleges and had gained experience of diseases of children at the Victoria Hospital, of diseases of the chest at the Brompton under Douglas Powell and of diseases of the nervous system at UCH under Charlton Bastian

Vandyk

Only child of John Carr, JP, a chemist who had passed on his ambition to be a doctor to his son, John Walter was born in London and educated at University College School and Hospital where he qualified in 1884 He took his London degree in the following year with first-class honours in medicine, surgery and midwifery His first honorary appointment was as assistant physician to the Victoria Hospital in 1889 and he remained on the staff till he became consulting physician in 1920 Outside medicine one of his chief interests was education, and when he was appointed assistant physician to the Royal Free in 1893, and a few years later lecturer in medicine at the women's school, he worked wholeheartedly for students His teaching was largely modelled on that of his old chief, Christopher Heath, a former PRCS He was also on the council of Epsom College and was associated with the examinations for the state registration of nurses He was a freeman of the City of London and from 1914 a member of the court of the Haberdashers Company which he also served for a term as master In such duties, especially those connected with the Drapers and Haberdashers schools, he found solace as professional claims diminished He was a great traveller, but in recent years a severe multiple arthritis deprived him of the long walks which he had enjoyed both at home and in Switzerland

About 40 years ago Carr was smitten with writer's cramp, and though he learned to write with his left hand this disability and his heavy hospital and teaching duties prevented him from contributing as much to medical literature as he might have done Perhaps his most important paper was on non-tuberculous posterior basic meningitis in infants, the first complete account of the disease published in this country, in which he pointed out its probable relationship—later to be confirmed by Still—to cerebrospinal fever His official addresses to the Medical Society of London were common sense, expressed with dry humour spiced with cynicism Their matter after twenty years is still the controversy of the hour In "Medical Ambitions and Ideals" he sets out the dangers he saw inherent in a state medical service in which the ministry of health took the place of the medieval church with its chief medical officer as an uncrowned pope In "A Medical Utopia" he pictures the tonsil-less, appendix-less, vaccine-filled being which this benevolent autocracy might be expected to produce For himelf he would rather see England free than healthy, and he urged his colleagues not to lose sight of primary causes when seeking to ameliorate secondary consequences

His CBE was in recognition of his work at the hospital for officers, carried on in a part of the Royal Free during the last war His knowledge of affairs made him a valuable member of committees, and his straightforward fearless but tempered judgment carried great weight both in the councils of his hospital and of the RCP where he served as censor 1926–28 He married in 1895, Jessie, daughter of Walter Griffith, of Streatham Hill She died in 1937 and they leave a son and three daughters, two of whom married medical men

GEORGE ARTHUR EWART

B A CAMB, F R C S

Mr G A Ewart, surgeon to St George's Hospital, died on Oct 2, at the age of 56, after one day's illness He was the son of Cossar Ewart, FRS, professor of zoology in the University of Edinburgh, and was educated at Clifton College, Edinburgh University and Christ College, Cambridge At both universities he gained scholarships, and at Cambridge he took a first-class in the natural sciences tripos, besides representing the university at cross country running Qualifying at St George's in 1912, he took the FRCS two years later, and was shortly afterwards appointed to the assistant staff, which he was to serve for fifteen years before proceeding to the senior staff During last war as a temporary major RAMC he worked in France, and in the 4th London General Hospital at home His other peace-time appointment was to the Hospital of SS John and Elizabeth to which he was consulting surgeon at the time of his death

As Ewart grew older his surgical interests became more and more concentrated on the surgery of the abdomen, and, in particular, on acute abdominal diseases He had a flair for this work, and combined sureness of diagnosis with a technique which was equally sure, but which he loved to make dramatic His long service as assistant surgeon had given him an exceptional experience in abdominal emergencies, and even when on the senior staff he was always keen to do this kind of work himself As a teacher Ewart was effective—one of those men who belittle their own knowledge to give their students the feeling that the gulf between themselves and their teacher is not unbridgeable, and that their difficulties are really understood

Many generations of George's students will remember with gratitude the friendly hospitality which they received from Ewart and his family, and many others who were of his profession or who shared his abounding interest in country things—shooting, natural history and photography He married in 1914 Dorothy, daughter of Sir George Turner, surgeon, rear-admiral and writer, and they had one son and two daughters

EDWARD FAWCETT

M D EDIN, F R S

ON Sept 21 Professor Fawcett, who for forty one years held the chair of anatomy in the University College and University of Bristol, died suddenly while walking in the street He had occupied a pre eminent place in the work of the university and in the affections of many generations of medical students

Elliott & Fry

He came to Bristol as a young man in 1893, four years after he had qualified at Edinburgh University, to be the first full-time professor of anatomy in University College, and he captured the attention of a none too orderly crowd of medical students immediately by his capacity to lecture, to demonstrate, to illustrate by drawings and by his power of keeping order Perhaps he had other gifts besides his grasp of anatomy that gave him authority in his class-room He was an all-round athlete, and as a cricketer might have found a place in almost any county team Edward Fawcett was born in 1867, the son of Thomas Fawcett, BA, at Blencow, near Penrith, and was educated at the grammar school there and at Edinburgh University By 1887 he had become a demonstrator of anatomy in the Edinburgh School of Medicine and after he graduated in 1889 he was demonstrator of anatomy at Yorkshire College Leeds till he was called to Bristol In 1906 he became dean of the faculty of medicine and he played an important part in organising the faculty when the university was given its charter three years later Successive vice-chancellors relied implicitly upon his judgment and experience in all that related to medical study, and their confidence was justified For he was able and diligent in his attention to affairs Academic honours naturally came to him, and in 1906 he won the gold medal for his MD thesis at Edinburgh In 1909 he was made president of the anatomical section of the International Congress of Medicine at Budapest, and from 1927 to 1929, he also held that office in the Anatomical Society

Fawcett's researches into the development of the human skeleton and of the mammalian chondrocranium won for him the FRS in 1923, but the beautiful wax models which illustrated his work have been lost by enemy action Apart from his prowess at cricket Fawcett had many hobbies He was an indefatigable cyclist and used his bicycle on many expeditions to study church architecture He was a first-rate photographer, and some of his best work illustrated his presidential address to the Bristol and Gloucestershire Archæological Society in 1936 when he spoke on anthropophagous sculpture and royal arms in churches For many years he represented Bristol on the Central Council for the Preservation of Churches, and for the past months he had been rephotographing local churches for the national collection Prehistory was another of his recreations, and he was energetic in his support of the University Spelæological Society of which he was for many years president, and he was the enthusiastic comrade of the youngest undergraduates on expeditions to explore the caves of the Mendips

Professor Fawcett married in 1895 Edith Dora Wordsworth, and he leaves her with a daughter and a son, A W Fawcett, surgeon to the Sheffield Royal Infirmary

FRANK HOLT DIGGLE

OBE, MB MANC, FRCS

Holt Diggle died at his home in Dunham Massey, Cheshire, on Sept 30 He was dressing when a heart attack took him away with tragic but merciful suddenness Only back a few days from a short holiday in the English Lakes he was at work as usual on the day before his death Born in the Lancashire town of Heywood fifty-seven years ago, he took his medical course at the Manchester University, graduating MB with second-class honours in 1909 Although his contemporaries in the medical school were a galaxy the like of which the school may never know again, Diggle's star was not dimmed by comparison In face of keen competition, he took medals in anatomy, gynæcology and medicine, these, in addition to the Bradley surgical scholarship and the Agnew scholarship for diseases of children In 1910 he obtained the English conjoint qualification and three years later the fellowships of the English and Edinburgh colleges of surgeons Before joining the Army in 1915 his experience included appointments in Manchester and London and a spell of general practice in Bradford Till 1919 he served as a surgical specialist in the RAMC, and for his services in the Near East he was awarded the OBE and mentioned in dispatches

J Ingham & Sons

The war over, Diggle held resident and honorary appointments in hospitals in Birmingham, but in 1920 on his appointment as oto-laryngologist to the Ancoats Hospital Manchester, he came home again, and although later he joined the Manchester Ear Hospital, the Christie Hospital and Holt Radium Institute and was consultant to many other hospitals outside the city, it is for his work at Ancoats that he will be remembered He was its first aural surgeon, and starting from nothing he built up a big, well-equipped and well-organised clinic Despite heavy calls on his time and energies he made opportunities to write on many problems in his specialty, following closely in the steps of his teacher—the late Sir William Milligan—and the scope of his writings shows the breadth of his interests the rôle of nasal disease in asthma, the influence of disease of the thyroid gland on disorders of the nose, ear and throat, foreign bodies in the air and food passages, the surgical treatment of lacrymal obstruction, cancer of the larynx He attended regularly the meetings of the Royal Society of Medicine and the Manchester Medical and other societies He knew all the important British clinics and had visited many of the foreign ones as well

Diggle's best card in his strong hand was his laryngeal surgery His long training in general surgical technique stood him in good stead, and in the conflict between surgery and ray-therapy in the treatment of laryngeal malignancy, he preserved a nice balance and a fine judgment There was a good deal of the artist in his make-up, sensitive, self-critical imaginative and creative His sensitiveness led him sometimes to misunderstand his fellows and sometimes to be misunderstood His self-criticism drove him to give of his best to all at all times and to demand an exactingly high standard of those who worked with him, though he never stinted praise or thanks as a just reward for good service His self-criticism, too, made him face surgical failure in the Mackenzie tradition asking why and seeking the answer, in success, he had something of Ambroise Paré's humility From the imaginative side of his nature sprang the restless desire to try new ideas and hazard new methods, in his private life it showed itself in an appreciation of the arts and a love of music

Frank Diggle had no absorbing hobby but many interests He played a round of golf with enthusiasm, though it must be admitted that his back-chat was better than his back-swing Essentially a family man, he was at his most likeable best in his home, where his generous heart and happy Lancashire wit shone in their true setting With his widow and daughter we share his memory and mourn his loss

V L

Dr A T NANKIVELL who died at Abingdon Berks, on Oct 3, had been MOH successively for Hornsey, Poole and Plymouth He collaborated with R T. Hewlett in *The Principles of Preventive Medicine*, and wrote a popular primer on *The Science of Hygiene* For many years he was lecturer in epidemiology at King's College, London

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Infectious Disease in England and Wales

WEEK ENDED OCT 3

Notifications—The following cases of infectious disease were notified during the week smallpox, 0 scarlet fever, 2123, whooping-cough, 845, diphtheria, 860, paratyphoid 5, typhoid 6 measles (excluding rubella), 3801, pneumonia (primary or influenzal), 508, puerperal pyrexia, 172, cerebrospinal fever, 61, poliomyelitis, 33, polio encephalitis, 6, encephalitis lethargica, 3, dysentery 232, ophthalmia neonatorum, 95. No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Sept 30 was 1566 including scarlet fever 455 diphtheria 193 measles 172 whooping cough 217 enteritis 64, chicken pox 56 erysipelas, 44 mumps, 48, poliomyelitis 11 dysentery 52 cerebrospinal fever, 8, puerperal sepsis 23 enteric fevers 10 german measles, 2 glandular fever 1, other diseases (non infectious) 124 not yet diagnosed 86

Deaths—In 126 great towns there were no deaths from the enteric fevers, 6 (0) from measles 3 (0) from scarlet fever 13 (3) from whooping-cough 20 (0) from diphtheria, 72 (6) from diarrhœa and enteritis under two years, and 12 (1) from influenza The figures in parentheses are those for London itself

Liverpool reported 3 fatal cases of diphtheria There were 8 deaths from diarrhœa at Liverpool, 7 at Birmingham and 6 at Manchester

The number of stillbirths notified during the week was 201 (corresponding to a rate of 31 per thousand total births) including 32 in London

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MEDICO LEGAL SOCIETY—A meeting of this society will be held at 26, Portland Place, London, W 1, on Thursday, Oct 22, at 4 30 PM, when Lieut-Colonel W W Mansfield, MIMechE, will read a paper on disguise in handwriting

ON THE FLOOR OF THE HOUSE

MEDICUS M P

THE House is getting more health-conscious A question by Sir Smedley Crooke asking for a mobile immunisation service van for diphtheria to be sent to other cities in view of its success at Portsmouth led to a round of supplementaries like a first-rate political issue Health indeed has become a first-rate political issue

When he announced the completion of the MRC report on tuberculosis the Minister of Health said he had already taken action on a number of points The question the answer, and the supplementaries occupy more than could get their [illegible] columns of Hansard—more than sometimes is radiography and the acquisitions on an important war issue And they plus arrangements for the tr questions Indeed more members rose expert staff is quick action It is questions in The adoption of mass provision of the extra accommodation ing of 30 sets of apparatus envisaged by the Minister will not be held up running of the necessary nurses Perhaps the most important provision announ be hoped that the by the Minister is the authorisation given to local for treatment authorities to grant financial assistance for the maintenance of the dependants of those undergoing treatment lack of going These grants are to be made as part of the public-health service and it will not involve a means test

As to whether these facilities apply to ex-Service men the Minister was not so explicit as on other points but it is clear that an ex-Service man (or woman) is in the same position as any other member of the public The Army do not accept liability for the tuberculosis of men discharged from the Service, unless it is accepted as attributable, which is rare There seems every reason to hope, therefore, that adequate treatment may now become available The Secretary for Scotland, Dr Tom Johnston was pressed to make a full statement from the Scottish angle but preferred to wait until he had consulted with local authorities

Good as the facilities for diagnosis are, everything turns on the facilities for treatment of early cases and—a matter on which Mr Brown did not touch—on treatment and isolation of advanced cases to prevent the spread of infection A rise in the incidence of tuberculosis occurred in the last war and it occurred in Germany and in Russia as elsewhere The need for tackling the problem today is now so clearly recognised that nothing should be allowed to stand in the way It is hoped that special attention will be given to the ex-Service cases and that the differences in methods of dealing with cases, and of accepting financial responsibility for cases, will not be allowed to stand in the way of a nationally efficient system

MINISTER'S STATEMENT ON TUBERCULOSIS

"We are about to begin a new drive against consumption—a drive of a kind never attempted before in this country"

Mr JAMES GRIFFITHS asked the Minister of Health whether he was in a position to make any further statement on tuberculosis —Mr E BROWN replied I am grateful that the committee which was appointed by the Medical Research Council at my request has completed its report which was published on Oct 8 I have kept in touch with the committee and have already taken action on a number of points which are included in their recommendations. To facilitate early diagnosis we obtained priority for the supply of some 30 sets of equipment for mass radiography We are allocating them to large centres of population where they can be used to the best advantage In consultation with local authorities and with the assistance of an expert committee we have arranged for the training of the necessary expert staff the operation of this equipment Deliveries will be gradual and arrangements for operation in the individual districts and for cooperation between authorities must be worked out in detail, but I expect that an effective start will be made in the New Year The extended arrangements for diagnosis will mean some increase in the need for accommodation Additional beds are being allocated to meet this need and action is being taken to meet the needs for nursing and domestic staff Domestic and nursing work in hospitals, incl regarded as war service for which su age-group may volunteer and to w allocated by the Ministry of Lab Service, and I have been in consult league with a view to special attentio the working of sanatoria is being han the necessary staff Immediate ne trained nurses can only be met by a be the trained nurses available Detaile such a distribution and, in particular, effective use of nurses who are comple members of the Civil Nursing Reserv can be temporarily spared without current efficiency of the hospital to attached, will be worked out by my consultation with representatives of th the nurses

Where facilities for diagnosis an available *it is important that those w temporarily for treatment*, which is in t public health no less than their own, sh so without financial anxiety as to the their dependants Local authorities being authorised to grant financial assi by the public for the maintenance of the dependants treatment under the of the home while the bread incurred by *them in account* This assistance will ments which I am now working out authorities as a part tives will be repaid from Exchequer nal ulosis schem tary of State for Scotland authorises making similar arrangements in Scotland

DIFFICULTIES TO BE MET

Mr J GRIFFITHS Is the Minister satisfied able to secure the necessary number of nurses service outlined, and in regard to the assistance since the payments would come out of the Exch be on a scale determined nationally ?—Mr Br scale will be so determined, but the plan is a maintenance and extra grants for standing cha educational costs and rents and things of that now discussing the details with representatives of tion of Municipal Corporations, the County Co tion and the London County Council. We are the light of the local knowledge of my regional list of the hospitals in which the need for nurses is will include a large proportion of the sanatoria, then ask the various training schools to provide a q nurses coming out of training for allocation to We shall also review the Civil Nursing Reserve an staffs in hospitals for current needs with a view to them and attaining the end we all want Replying questions Mr Brown made it clear that the ma ments were not to be on the basis of a means test be part of the public health service The were in touch with other ministries with a view to incidence of non pulmonary tuberculosis which coul to infected milk. On the question of pasteurisation the House to answers which he had given during the

Captain G S ELLISTON asked whether the mass ra sets would be available for selected counties and boroughs where the medical officer of health had approved scheme ?—Mr BROWN We shall work in tion with the authorities The sets are transportable, are best kept at places where they can be used for a

Mr F J BELLENGER Will these facilities both for and for maintenance of dependants apply to that large of men who will be discharged from the Services as a of this disease ?—Mr BROWN They will apply to all w concerned with common tuberculosis and the work d connexion with the arrangements at local sanatoria are a number of discharged Service men in the sanat

SIR FRANCIS FREMANTLE Will the Minister be in touch the ministries of the fighting Services so that they pr tuberculous men from getting into the Services and ha be invalided out later on ?—Mr BROWN The initiative use of mass radiology was taken by the Services

Replying to further questions Mr Brown said th Ministry of Health had under consideration the quest help and encouragement for the after care

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r T JOHNSTON, Secretary of State for Scotland, informed r G BUCHANAN that he would make a statement on the heme as it affected Scotland after he had consulted with the al and health authorities on the subject Mr A MAC REY asked the Minister if he was not aware that all this pense might be more or less abortive owing to the present l housing conditions and urged that something must be ie immediately to deal with that problem No further ly was given

QUESTION TIME

Cod-liver Oil and Fruit Juices for Children

r H BROOKE asked the Parliamentary Secretary to the istry of Food whether he could give figures showing comparable basis, the proportions of eligible children for n parents or guardians were obtaining cod liver oil and juices in the period before April when these were made able to them by the Ministry free of charge, and the nt proportions now that they were available for a small ent —Mr W MABANE replied I regret that it is not ble to supply comparable figures, as the ages of entitle have varied during these periods Also, the products are istributed free of charge to children where the weekly e of the parent(s) or guardian(s) does not exceed certain

From the commencement of the scheme in December, and until Feb 1, 1942, only children under two years were entitled to cod liver oil From Feb 1 to March 31 dren holding R B 2 ration books (i e children under six were entitled to supplies. During the period December ch 31 all children up to two years were allowed fruit ree of charge Payment for the products was intro n April 1, 1942, and supplies of cod liver oil were then ed to children under five years of age From April 1 6 only children under two years were entitled to fruit but as from the latter date the age of entitlement was to three years The figures given below, although cannot be used for purposes of comparison in view of the epancy in the ages of entitlement, give a picture of the up during the periods before and after payment was duced

age weekly take up of		Per cent. of children eligible
d liver oil during four weeks in	March, 1942	24 1
" " " "	June, 1942	12 8
uit juices " " "	March, 1942	38 8
" " " "	June, 1942	33 9

Diphtheria Immunisation

r SMEDLEY CROOKE asked the Minister of Health if, in of the success attending the experiment of sending the ile immunisation service for prevention against diphtheria he children at Portsmouth, he would consider similar ice being sent to children in other cities and large towns re the need for immunisation was equally urgent —Mr WN replied I have already taken steps to ensure that idea is brought to the notice of local authorities generally ny regional officers, and every opportunity is taken of mmending it in areas where it is likely to be practicable useful.—Sir S CROOKE Is the Minister satisfied that there fficient vaccine ?—Mr BROWN We can do the job for the ent —Captain GODFREY NICHOLSON Will the Minister ider the preparation of full sized cinema films which can sed for propaganda ? At present the available films are t suitable for exhibition in an ordinary cinema —Mr OWN I will look into that point

Wing Commander A. W H JAMES asked the Minister ther, since the immunisation of children against diphtheria s available without cost to all parents, he would make an er that the full cost of treatment of diphtheria cases should recoverable from parents in cases where the patients had t been immunised —Mr BROWN replied I do not feel that should be justified in adopting this suggestion

Shortage of Hospital Staffs

Sir R GLYN asked the Minister of Labour what representations he had recently received from the governing bodies of the London voluntary teaching hospitals as regards the position of the hospitals under existing circumstances of increasing work with decreasing staff on account of the continued calling up by his department, whether he was aware that nurses were being overworked as well as the medical staff, that domestic help of the kind and quantity required was not obtainable, and whether he would arrange that the existing staff, both medical and lay, be directed to remain at their posts and that, as far as possible, other essential help would be supplied —Mr ERNEST BEVIN replied I have received no representations from the governing bodies of these hospitals on this general subject and would point out that nursing staff and women domestics in hospitals are regarded as reserved and are not called up by my department and men over military age would not be withdrawn Applications for the deferment of calling up of men of military age are considered individually and no man would be called up until after consultation with the Ministry of Health The selection of medical practitioners for H M Forces is carried out by the Central Medical War Committee subject to the approval of the Minister of Health I am aware of a shortage of nurses and domestic staff in certain hospitals As I have repeatedly stated, nursing and domestic work in hospitals is regarded as vital war work for women of all ages and in addition hospitals themselves can help to meet labour shortage by employing part time domestic workers to the fullest possible extent The whole question of making the best use of the services of hospital staff is under constant review

Hospital Surveys

Mr A PEARSON asked the Minister of Health whether he was aware of the dislike of the contents of his letter dated July 9, 1942, to the chairman of the Nuffield trustees, indicating proposals to organise surveys of local authority hospitals and *that a secret report was to be made to him by the voluntary* organisation on coördination and development of the service in the area the local authority administers, and what indications he had had from Welsh local authorities of their unwillingness for such surveys and secret reports to be made by a voluntary body on their statutory responsibilities —Miss F HORSBRUGH replied The Minister has received no such representations from Welsh local authorities, and the second paragraph of the letter referred to indicates that the Nuffield trustees will undertake surveys only after the representatives of the voluntary hospitals and of the local authorities in the areas concerned have signified their willingness for a survey to be organised

Examination of Women Workers

Lieut -Commander G I HUTCHISON asked the Minister of Labour whether, with a view to preventing women who were not in good health being directed to munition work away from home, he would consider the advisability of arranging that all mobile women should undergo a medical examination before being sent away from their own district —Mr BEVIN replied It is always open to a woman to bring medical evidence to show that she is not fit to undertake employment which is proposed for her, and if necessary arrangements are made for a medical examination As at present advised I do not consider that a routine or compulsory medical examination is desirable

Medical Report on National Flour

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Quinine

General Sir GEORGE JEFFREYS asked the Minister of Supply whether our supplies of quinine were adequate, and, if not, what steps were being taken to replace them.—Mr CHARLES PEAT replied Supplies of quinine are adequate for a considerable period. Active steps have been taken to manufacture synthetic substitutes to replace quinine in the treatment of malaria

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M P

THE House is getting more health-conscious A question by Sir Smedley Crooke asking for a mobile immunisation service van for diphtheria to be sent to other cities in view of its success at Portsmouth led to a round of supplementaries like a first-rate political issue Health indeed has become a first-rate political issue

When he announced the completion of the MRC report on tuberculosis the Minister of Health said he had already taken action on a number of points The question, the answer, and the supplementaries occupy more than four columns of Hansard—more than sometimes is given to questions on an important war issue And they
than could get their questions Indeed more members rose
radiography and the acqu stions in The adoption of mass
plus arrangements for the tra ing of 30 sets of apparatus
expert staff is quick action It is to ning of the necessary
provision of the extra accommodation be hoped that the
envisaged by the Minister will not be held up for treatment
nurses *Perhaps the most important provision anno* lack of
by the Minister is the authorisation given to local
authorities to grant financial assistance for the maintenance of the dependants of those undergoing treatment These grants are to be made as part of the public-health service and it will not involve a means test

As to whether these facilities apply to ex-Service men *the Minister was not so explicit as on other points, but it* is clear that an ex-Service man (or woman) is in the same position as any other member of the public The Army do not accept liability for the tuberculosis of men discharged from the Service, unless it is accepted as attributable, which is rare There seems every reason to hope, therefore, that adequate treatment may now become available The Secretary for Scotland, Dr Tom Johnston, was pressed to make a full statement from the Scottish angle but preferred to wait until he had consulted with local authorities

Good as the facilities for diagnosis are, everything turns on the facilities for treatment of early cases and—a matter on which Mr Brown did not touch—on treatment and isolation of advanced cases to prevent the spread of infection A rise in the incidence of tuberculosis occurred in the last war and it occurred in Germany and in Russia as elsewhere The need for tackling the problem today is now so clearly recognised that nothing should be allowed to stand in the way It is hoped that special attention will be given to the ex-Service cases and that the differences *in methods of dealing with cases*, and of accepting financial responsibility for cases, will not be allowed to stand in the way of a nationally efficient system

MINISTER'S STATEMENT ON TUBERCULOSIS

"We are about to begin a new drive against consumption—a drive of a kind never attempted before in this country"

Mr JAMES GRIFFITHS asked the Minister of Health whether he was in a position to make any further statement on tuberculosis —Mr E BROWN replied I am grateful that the committee which was appointed by the Medical Research Council at my request has completed its report which was published on Oct 8 I have kept in touch with the committee and have already taken action on a number of points which are included in their recommendations To facilitate early diagnosis we obtained priority for the supply of some 30 sets of equipment for mass radiography We are allocating them to large centres of population where they can be used to the best advantage In consultation with local authorities and with the assistance of an expert committee we have arranged for the training of the necessary expert staff the operation of this equipment Deliveries will be gradual and arrangements for operation in the individual districts and for cooperation between authorities must be worked out in detail, but I expect that an effective start will be made in the New Year The extended arrangements for diagnosis will mean some increase in the need for accommodation Additional beds are being allocated to meet this need and action is being taken to meet the needs for nursing and domestic staff Domestic and nursing work in hospitals, including sanatoria, is regarded as war service for which suitable women of any age-group may volunteer and to which they may be *allocated by the Ministry of* Labour and National Service, and I have been in consultation with my colleague with a view to special attention to districts where the working of sanatoria is being hampered by a lack of the necessary staff Immediate needs in regard to trained nurses can only be met by a better distribution of the trained nurses available Detailed plans to facilitate *such a distribution and, in particular*, to secure the most effective use of nurses who are completing their training members of the Civil Nursing Reserve, and nurses who can be temporarily spared without prejudice to the current efficiency of the hospital to which they are attached will be worked out by my regional officers in consultation with representatives of the hospitals and of the nurses

Where facilities for diagnosis and treatment are available it is important that those who give up work temporarily *for treatment*, which is in the interest of the public health no less than their own, should be able to do so without financial anxiety as to the maintenance of their dependants Local authorities are accordingly being authorised to grant financial assistance to provide
brea for the maintenance of the dependants and to avoid the
going treatm of the home while the breadwinner is under-
by the public-heal th. This assistance will be administered
treatment under the tuberculosis authorities as a part of the approved
incurred by them in accordan ulosis scheme, and the cost
ments which I am now working out e with detailed arrange-
tives will be repaid from Exchequer t with their representa-
tary of State for Scotland authorises ne funds The Secre-
making similar arrangements in Scotlan e to say that he is

DIFFICULTIES TO BE MET

Mr J GRIFFITHS Is the Minister satisfied t m.
able to secure the necessary number of nurses t hat he will be
service outlined, and in regard to the assistance to provide the
since the payments would come out of the Excheq dependants,
be on a scale determined nationally?—Mr BROW ner, will they
scale will be so determined, but the plan is a The flat
maintenance and extra grants for standing char flat rate for
educational costs and rents and things of that ges, such as
now discussing the details with representatives of und. I am
tion of Municipal Corporations, the County Counc the Associa
tion and the London County Council. We are dr il Associa-
the light of the local knowledge of my regional staff wing up a
list of the hospitals in which the need for nurses is s a priority
will include a large proportion of the sanatoria, an urgent It
then ask the various training schools to provide a qu d we shall
nurses coming out of training for allocation to these ota of the
We shall also review the Civil Nursing Reserve an hospitals.
staffs in hospitals for current needs with a view to d nursing
them and attaining the end we all want Replying allocating
questions Mr Brown made it clear that the mainte to further
ments were not to be on the basis of a means test ance pay
be part of the public health service The Ministry at were to
were in touch with other ministries with a view to re of
incidence of non-pulmonary tuberculosis which could lacing
to infected milk. On the question of pasteurisation h be
the House to answers which he had given during the la

Captain G S ELLISTON asked whether the mass radio sets would be available for selected counties and boroughs where the medical officer of health had submi approved scheme?—Mr BROWN We shall work in c tion with the authorities The sets are transportable, bu are best kept at places where they can be used for a per

Mr F J BELLENGER Will these facilities both for trea and for maintenance of dependants apply *to that large nu* of men who will be discharged from the Services as a r of this disease?—Mr BROWN They will apply to all wh concerned with common tuberculosis and the work don connexion with the arrangements at local sanatoria T are a number of discharged Service men in the sanator

SIR FRANCIS FREMANTLE Will the Minister be in touch *the ministries of the fighting Services so that they pr* tuberculous men from getting into the Services and hav be invalided out later on?—Mr BROWN The initiative i use of mass radiology was taken by the Services

Replying to further questions Mr *Brown* said tha Ministry of Health had under consideration the questi help and encouragement for the after care comm

Mr T JOHNSTON, Secretary of State for Scotland, informed Mr G BUCHANAN that he would make a statement on the scheme as it affected Scotland after he had consulted with the local and health authorities on the subject Mr A MACLAREN asked the Minister if he was not aware that all this expense might be more or less abortive owing to the present bad housing conditions and urged that something must be done immediately to deal with that problem No further reply was given

QUESTION TIME

Cod-liver Oil and Fruit Juices for Children

Mr H BROOKE asked the Parliamentary Secretary to the Ministry of Food whether he could give figures showing on a comparable basis, the proportions of eligible children for whom parents or guardians were obtaining cod liver oil and fruit juices in the period before April when these were made available to them by the Ministry free of charge, and the present proportions now that they were available for a small payment —Mr W MABANE replied I regret that it is not possible to supply comparable figures, as the ages of entitlement have varied during these periods Also, the products are still distributed free of charge to children where the weekly income of the parent(s) or guardian(s) does not exceed certain limits From the commencement of the scheme in December, 1941, and until Feb 1, 1942, only children under two years of age were entitled to cod liver oil From Feb 1 to March 31 all children holding R B 2 ration books (i e children under six years) were entitled to supplies During the period December to March 31 all children up to two years were allowed fruit juices free of charge Payment for the products was introduced on April 1, 1942, and supplies of cod liver oil were then restricted to children under five years of age From April 1 to July 6 only children under two years were entitled to fruit juices, but as from the latter date the age of entitlement was raised to three years The figures given below, although they cannot be used for purposes of comparison in view of the discrepancy in the ages of entitlement, give a picture of the take up during the periods before and after payment was introduced

Average weekly take up of		Per cent of children eligible
Cod liver oil during four weeks in	March, 1942	24 1
” ” ” ”	June, 1942	12 8
Fruit juices ” ” ”	March, 1942	38 6
” ” ” ”	June, 1942	33 9

Diphtheria Immunisation

Sir SMEDLEY CROOKE asked the Minister of Health if, in iew of the success attending the experiment of sending the obile immunisation service for prevention against diphtheria the children at Portsmouth, he would consider similar rvice being sent to children in other cities and large towns here the need for immunisation was equally urgent —Mr ROWN replied I have already taken steps to ensure that is idea is brought to the notice of local authorities generally my regional officers, and every opportunity is taken of commending it in areas where it is likely to be practicable d useful —Sir S CROOKE Is the Minister satisfied that there sufficient vaccine ?—Mr BROWN We can do the job for the oment —Captain GODFREY NICHOLSON Will the Minister nsider the preparation of full sized cinema films which can used for propaganda ? At present the available films are ot suitable for exhibition in an ordinary cinema —Mr ROWN I will look into that point

Wing Commander A. W H JAMES asked the Minister ether, since the immunisation of children against diphtheria as available without cost to all parents, he would make an der that the full cost of treatment of diphtheria cases should recoverable from parents in cases where the patients had ot been immunised —Mr BROWN replied I do not feel that should be justified in adopting this suggestion

Shortage of Hospital Staffs

Sir R GLYN asked the Minister of Labour what representations he had recently received from the governing bodies of the London voluntary teaching hospitals as regards the position of the hospitals under existing circumstances of increasing work with decreasing staff on account of the continued calling up by his department, whether he was aware that nurses were being overworked as well as the medical staff, that domestic help of the kind and quantity required was not obtainable, and whether he would arrange that the existing staff, both medical and lay, be directed to remain at their posts and that, as far as possible, other essential help would be supplied —Mr ERNEST BEVIN replied I have received no representations from the governing bodies of these hospitals on this general subject and would point out that nursing staff and women domestics in hospitals are regarded as reserved and are not called up by my department and men over military age would not be withdrawn Applications for the deferment of calling up of men of military age are considered individually and no man would be called up until after consultation with the Ministry of Health The selection of medical practitioners for H M Forces is carried out by the Central Medical War Committee subject to the approval of the Minister of Health I am aware of a shortage of nurses and domestic staff in certain hospitals As I have repeatedly stated, nursing and domestic work in hospitals is regarded as vital war work for women of all ages and in addition hospitals themselves can help to meet labour shortage by employing part time domestic workers to the fullest possible extent The whole question of making the best use of the services of hospital staff is under constant review

Hospital Surveys

Mr A PEARSON asked the Minister of Health whether he was aware of the dislike of the contents of his letter dated July 9, 1942, to the chairman of the Nuffield trustees, indicating proposals to organise surveys of local authority hospitals and that a secret report was to be made to him by the voluntary organisation on coördination and development of the service in the area the local authority administers, and what indications he had had from Welsh local authorities of their unwillingness for such surveys and secret reports to be made by a voluntary body on their statutory responsibilities —Miss F HORSBRUGH replied The Minister has received no such representations from Welsh local authorities, and the second paragraph of the letter referred to indicates that the Nuffield trustees will undertake surveys only after the representatives of the voluntary hospitals and of the local authorities in the areas concerned have signified their willingness for a survey to be organised

Examination of Women Workers

Lieut -Commander G I HUTCHISON asked the Minister of Labour whether, with a view to preventing women who were not in good health being directed to munition work away from home, he would consider the advisability of arranging that all mobile women should undergo a medical examination before being sent away from their own district —Mr BEVIN replied It is always open to a woman to bring medical evidence to show that she is not fit to undertake employment which is proposed for her, and if necessary arrangements are made for a medical examination As at present advised I do not consider that a routine or compulsory medical examination is desirable

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Medical News

University of Cambridge

At recent examinations the following were successful

DMRE

Part II—R A D J Bernhardt, A B Donald, H R Holmes, Benzion Kounine, Arnost Preiss, R A Williams and Hugh Wormald

Royal College of Surgeons of England

At a meeting of the council of the college, held on Oct 8, with Sir Alfred Webb Johnson, the president, in the chair it was decided to increase the membership of the court of examiners from 17 to 20 Mr A J Graham was nominated as the fiftieth Jenks scholar A Leverhulme scholarship was awarded to F K Sanders, D Phil, who is investigating problems connected with the repair of peripheral nerve injuries Dr Douglas Lea was nominated for reappointment and Dr Lilian Walter for appointment as Prophit students for cancer research Mr Geoffrey Bourne, D Sc, has been reappointed a Mackenzie Mackinnon research fellow

Diplomas of membership were granted to T D Kellock, H G McQuade, J R K Preedy, D S Short, Edith M Waterhouse, and J F R Withycombe Diplomas in child health were granted jointly with the Royal College of Physicians to the following

A P Bentall, Elliott Emanuel, E G Fox J F Galpine, Aitolia Georgiadis, Margaret E Harker, D C Jackson, Elizabeth B S Scobbie, and Vera Settle

Society for Relief of Widows and Orphans of Medical Men

At a quarterly court on Oct 7 Dr R A Young, senior vice president, being in the chair, respect was paid to the memory of Mr V Warren Low, president for thirteen years The accounts for the half year ended June 30 were approved, grants to widows during this period came to £1937 10s, and £2090 had been invested After being for some years in abeyance, it was decided to make a Christmas present this year of £7 10*s* to each widow in receipt of a grant Membership of the society is open to any registered medical man residing within a twenty mile radius of Charing Cross Particulars from the secretary, 11, Chandos Square, London, W 1

Royal Medico-Psychological Association

A meeting of this society will be held at 10 30 AM, on Wednesday, Oct 21, at 11, Chandos Street, London, W 1, when there will be a symposium on the incidence of tuberculosis and dysentery in mental hospitals

Institute of Chemistry

The South Yorkshire section will hold a special meeting on the chemist and industrial health at Sheffield city hall on Thursday, Oct 22, at 2 45 PM Dr F S Fowweather and Dr M W Goldblatt are to be the opening speakers Further information from the hon secretary of the section, at 52, Whirlow Grove, Sheffield, 11

Photography in Industry and Science

During November the Association of Scientific Workers is promoting an exhibition illustrating this title which will include work on mass radiography and nuclear physics Sir Robert Watson Watt, FRS, will open the exhibition on Oct 13, at 3 PM, in the rooms of the Royal Photographic Society at 16, Prince's Gate, London, SW7

North Western Tuberculosis Society

A meeting of this society will be held at 3 PM on Thursday, Oct 22, at the tuberculosis offices, 352, Oxford Road, Manchester, when Wing Commander R R Trail will speak on mass miniature radiography

Chadwick Lecture

On Tuesday, Oct 27, at the Royal Sanitary Institute, 90, Buckingham Palace Road, London, SW1, Mr W T Creswell, KC, will give a Chadwick lecture on the forensic aspects of war time public health legislation

RAMC Casualties

WS/Captain R J F Howe, MRCS, previously reported prisoner, is now posted as wounded and prisoner Major M E M Herford, MBE, MB Brist, has been wounded and the following officers have been taken prisoner Captain William Falconer, MB Edin, Lieut Colonel J T Lewis, FRCP, and Major J W Redgate, MRCS

Royal Society of Medicine

A meeting of the fellows of this society will be held on Tuesday, Oct 20, at 5 PM At 2 30 PM on the same day there will be a discussion at the section of orthopædics on painful feet The openers are to be Mr C Lambrinudi, Dr E J Crisp and Mr H L C Wood At 2 30 PM, Oct 21, at the section of comparative medicine, Prof Alexander Fleming, Mr A T Glenny and Mr Percival Hartley, FRS, will open a discussion on active immunity The urology section is holding a clinico pathological meeting on Oct 22, at 3 45 PM Dr Helen Mackay, Dr Leonard Findlay and Dr Hugh Sinclair are speaking at the section of disease in children on Oct 23, at 2 30 PM, when there is to be a discussion on nutritional anæmia in children and women as a war time problem

Dietetic Course for Nurses

The Royal College of Nursing has organised a dietetic course for nurses which will include 240 hours of practical experience in the dietetic departments of the Hammersmith Hospital, the London Hospital and in the canteen of the Morgan Crucible Company There will also be lectures on chemistry, physics, biochemistry and physiology Food for the sick, the healthy and the infant will be discussed and there will be lectures on the new dehydrated foods and on war time deficiencies to be guarded against in communal feeding Further particulars may be had from the director of the education department of the college, Henrietta Place, London, W 1

The Index and title-page to THE LANCET, Vol I, 1942, which was completed with the issue of June 27, is now ready A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager, 7, Adam Street, Adelphi, W C 2 Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

Births, Marriages and Deaths

BIRTHS

BANKOFF—On Oct 7, the wife of Mr George Bankoff, FRCS, of Harley Street, W 1—a son

BARCLAY—On Oct 3, at Devonport, the wife of Dr Gordon Barclay—a daughter

GORDON GRAY—On Oct 1, in Aberdeen, the wife of Major Stuart Gordon Gray, RAMC—a daughter

GREENE—On Oct 6, at Sutton, Surrey, the wife of Lieutenant A C Greene, IMS—a daughter

LEVICK—On Oct 5, at Windsor, the wife of Lieutenant R K Levick, RAMC—a daughter

MANNING—On Oct 3 at Farnborough, the wife of Dr F R C Manning, RAFVR—a daughter

NICHOLSON—On Oct 6, at Sutton Coldfield, the wife of Mr J C Nicholson, FRCSE, RAMC—a daughter

NORMAN—On Oct 6, at Poole, the wife of Surgeon Lieutenant R T Norman, RNVR—a daughter

ORAM—On Oct 5, the wife of Lieutenant Sam Oram, RAMC—a daughter

ROBINSON—On Oct 2 in Glasgow, the wife of Captain Wilfred Robinson, RAMC—a daughter

STOKES—On Oct 8, in London, the wife of Dr J F Stokes—a daughter

STRATON—On Oct 1, in Edinburgh, the wife of Surgeon Lieutenant James Straton, RNVR—a son

TOWNSEND—On Oct 6, the wife of Captain E W J Townsend, RAMC, of Hampton on Thames—a daughter

MARRIAGES

FIELDING—COOK—On Oct 3, in Leeds, John Fielding, MD, to Elizabeth Muriel Cook

DEATHS

CHANDLER—On Oct 8, Frederick George Chandler MD CAMB, FRCP, of Park Square West, N W 1, and Newdigate, aged 57

COLEMAN—On Oct 2, at Grenoble Albert Coleman, MB EDIN, Lieut Colonel IMS (retd), aged 79

HARRIS—On Oct 3, at Ashurst, Herbert George Harris, MD DURH, of Southampton

ROBERTS—On Oct 6, at Twyford, Hants, George Augustus Edward Roberts, MRCS, DPH, aged 80

ROBINSON—On Oct 5, Frank Robinson, MD MANC, DPH, of St Paul's Road, Cambridge

UNDERWOOD—On Oct 8, at Brackley, *Northants* John Charles Underwood, MRCS, aged 84

WAR AND THE ADVANCEMENT OF SOCIAL MEDICINE*

SIR WILSON JAMESON M D ABERD, LL D, F R C P, D P H
CHIEF MEDICAL OFFICER TO THE MINISTRY OF HEALTH AND BOARD OF EDUCATION

MOMENTOUS happenings such as those that marked Harvey's lifetime have often been followed by periods of great social change, and today I would recall some of the more modern lessons of war in the evolution of social medicine.

The great wars of the Napoleonic times are naturally the first to which we turn. This period was ultimately followed by a great stabilising advance in Europe, the seeds of which, so far as this country was concerned, were sown far back in the eighteenth century. The Industrial Revolution (1760) first made manifest the magnitude and character of the modern social problems. The Declaration of American Independence (1776) and the French Revolution (1789) announced to all the world a new conception of the political rights of man. In 1776 Adam Smith's *Wealth of Nations* and Jeremy Bentham's *Fragment on Government* established the fundamental economic and political principles of reform. The immediate reaction of our own politics to the Napoleonic wars was a static period, but the ideas sown long before had taken firm root and, strengthened by the fall of old-established but decrepit institutions, produced their effects during succeeding generations. There were the first Factory Acts, the initial grand experiment of defining the conditions that led to the recognition of industrial disease and the means of prevention. There was the humanitarian abolition of slavery in the British Empire, and there was the introduction of elementary education and the social emancipation brought about by the reform first of parliament and then of the poor law and the municipal corporations.

Nor did these constructive political principles stand alone, for even more arresting and threatening was the invasion of Britain by cholera in 1831, which led to the temporary establishment of cholera dispensaries and local boards of health and the emergence of that eminent pioneer Edwin Chadwick (the friend of Bentham), secretary of the Poor Law Commission, and maker of the first Board of Health in central government. Cholera came four times in epidemic form between 1831 and 1866, and served as a solemn warning to England to put her house in order.

CRIMEAN WAR

The period of the Crimean War (1854–56) marked another great awakening of the British mind. Professor Trevelyan of Cambridge has declared that "the real hero of the war was Florence Nightingale, and its indubitable outcome was modern nursing, both military and civil, a new conception of the potentiality and place in society of the trained and educated woman." Herbert Fisher in his *History of Europe* (1936) said that Miss Nightingale by "her personal example and fiery energy then and thereafter raised the whole status of the nursing profession, improved the standard of public hygiene, and, more powerfully perhaps than any other single influence, won for the women of her country the right of entry into serious and useful callings. The extraordinary achievement of Florence Nightingale in defying the conventions of the age in her great work for the relief of human suffering is one of the few compensations for the waste and havoc of the Crimean War."

Her example and energy were no doubt important factors in her historical contribution to social medicine. But her extraordinary powers of mind, knowledge, and genius were even more material and fruitful. In the Crimea Miss Nightingale opened wide the gates of order and efficiency in place of disorder and neglect. She broke through the tortuous ramifications of administrative incapacity, confusion and divided responsibility in the military hospitals; in place of the ignorance, incompetence and ineptitude of red-tape officialism she brought exact knowledge, experience and commonsense, and thus abolished the complacent acquiescence in a high mortality from wounds and a still higher mortality from preventable disease and starvation. In fact she reduced the mortality from disease among the soldiers by two-thirds.

After two dramatic years in the Crimea Miss Nightingale faced her next problem—the lack of hygiene in the British Army. In 1858 she published her *Notes affecting the health, efficiency and hospital administration of the British Army*. The Royal Commission appointed in 1857 to inquire into the sanitary condition of the army set a high value on her interesting evidence and it was largely due to her influence that an army medical college was opened at Chatham in 1850, a military hospital built in Woolwich in 1861 and an army sanitary commission established in permanence in 1862. Second, came the far-reaching problem of the necessity for adequate training of nurses, the institution of the Nightingale Training School, and the creation of a nursing profession. As a prelude thereto she published in 1859 her popular and classic *Notes on Nursing; what it is and what it is not*. Her third task was the initiation of a Royal Commission on the Sanitary State of the Army in India (1863). This dealt with the reorganisation of the public-health system in India, including sanitary commissioners, sanitation of villages, land irrigation, hospitals and prisons, and the prevention of periodic famines. Fourthly, in 1861 Miss Nightingale coöperated with Mr William Rathbone of Liverpool in introducing trained nurses in poor-law institutions in place of untrained "pauper nurses." Thus she created the special course of training and the wider sphere for nurses, midwives and health visitors. Lastly, in August, 1861, Miss Nightingale at the request of the British War Office formulated for the Geneva Convention the terms of the declaration of the principle of the "neutralisation" in war of Red Cross hospitals, doctors, nurses and wounded soldiers of whatever nation or race. These are the elements of Miss Nightingale's extraordinary workmanship and incomparable public service, so varied and skilful and prolonged over the immense period of her lifetime of ninety years. But it was of such national and international importance that historians agree that it changed the social history of England.

It is also instructive to recall that at this exact time the British Government taught the world the practice of preventive medicine, when Sir Edwin Chadwick, Lord Shaftesbury and Sir John Simon used to good purpose what they called the "new momenta"—growth of altruism in politics, increased consideration for the units of mankind, a developed apprehension of the meaning of social justice, and a widened consciousness of the range of social duty. Each in its application to hygiene and sanitary environment effected "a quickening time of human history, the new humanity promoting the rise of state medicine in England." From that were generated the Poor Law and the Health of Towns Commissions, the first great Public Health Act, affecting sanitary environment, a central Board of Health in Whitehall, the local medical officer of health, the General Register Office, and special legislation for the medical profession. Not a whit less important historically in its day was the Education Act of 1870, which first required elementary education of the English children, as well as the Royal Sanitary Commission of 1869–71, consolidating forty years of health legislation in the Public Health Act of 1875. These were the fundamental bases of national health which prepared the nation for a renaissance of reform in the governance of England in 1906.

SOUTH AFRICAN WAR

It seems rather strange that this new birth was ushered in by the effects of the South African (Boer) War. This was not one of the principal wars that change the affairs of men, but it touched the modern idealism in England very intimately. It raised from the beginning far-reaching issues concerning Imperial expansion. The Boers viewed it as a war of independence, the British Government saw it as the hopeful occasion for colonisation and empire consolidation. But alas, an ultimatum was issued, foresight was sadly lacking, and guerilla methods dragged the war on unexpectedly. Another complication was the disaster arising from the establishment by the British of "concentration camps" for Boer women and children which were so mismanaged that appalling mortality resulted. This had far-reaching political repercussion in England, as had the fact that upwards of 14,000 British soldiers died from disease, chiefly enteric fever, as against some 8000 who were killed in battle or died of wounds. The war ended on May 31, 1902, and the subsequent terms of peace were generous—repatriation, grants in aid of rebuilding, and self-government for Boers and British alike. Yet the problem of the physical unfitness of many army recruits, of the high mortality among the women and children in the Boer concentration camps, and the excessive mortality of the soldiers from disease were three facts that awakened England to the urgency and gravity of certain matters affecting the national health. The preventable loss of life profoundly impressed the British public and roused it to action.

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* Harveian oration delivered before the Royal College of Physicians of London on Oct 19, 1942.

The first fruits in England of the social effect of the South African War are to be found in the remarkable reports of three official inquiries.[1] For it was these three independent official "inquests" that for the first time in our national history brought to the notice and arbitrament of public opinion such homely domestic matters as the feeding, physical training and medical supervision of school-children in Britain. These reports created a profound impression on the heart and mind of the public and marked the birth of modern social medicine in this country. Not for thirty years had there been anything comparable with their effect, and the demand for social change was voiced in the new Parliament of 1906, which recognised that the children were the kernel of "the condition of the people question," and required an adequate national standard of health and decent living. These reports furnish a clear contrast with the famous report of the Royal Sanitary Commission of 1871, which dealt with the policy and administration of the health and sanitary system, while the new movement concerned the personal health, capacity and fitness of the individual. Let me name the purposes as they appeared in the Parliament of 1906:

> School feeding of children in attendance at elementary schools, school medical inspection and treatment, school care committees, prevention of infection in schools, physical training and hygiene in the school code, choice of employment for children, the early notification of births for the health visitation of every child, the campaign for the prevention of infant mortality, schools for mothers, the admission of elected women members to county and county borough councils, the provision out of the local rates of recreational open spaces, workmen's compensation for accidents in factories, old age pensions, labour exchanges, housing and town planning and the National Health Insurance Act of 1911.

All this was a novel "unheard of before" business, which engendered immense discussion and public controversy in Parliament and in every home in the land. Parliament had never in its history come so close to the homelife of the people of England for these social, even domestic, questions had not been hitherto the subject of statutory law. For here is the social purpose of some eighteen new laws in six years, conjoint evidence of a new spirit in the evolution of a people and its own governance, the very foundation-stones of social medicine.

The next ten years enhanced and extended the public interest awakened by these bills, and for the simplest of all reasons, a harvest of result was being gathered in—in every district, in every school, almost in every family—affecting the people's food, exercise, medical supervision, health, leisure, security. Life itself had been saved, or assured, or extended and enlarged. It was indeed a turning point to better and brighter days. What had brought this about ?

Of course so great a movement could be the result only of a long ancestry of causes. Many changes had marked England since the beginning of the industrial revolution in the middle of the eighteenth century. Not the least of these were the new humanitarianism typical of which were the Methodist Revival and the lives of John Howard, Edmund Burke, Wilberforce, Robert Owen, Romilly; the monetary value of health and life as contrasted with the monetary value of industry; the Reform Bill and the Ten Hours Bill agitation; the Public Health and Education Acts; the always extending enfranchisement; an always expanding British Commonwealth; and the evolution of democracy through a local government system, in which social cooperation and collectivism won victories impossible to despotic rule. All these belong to the ancestry of causes. But there was another kind of ferment coming into active operation—the growth of science, discovery and knowledge with its consequent new power, and particularly the ever widening influence of the scientific method. It was the application of the scientific method to the study of social conditions that resulted in the publication from 1889 to 1902 of a book on the *Life and Labour of the People of London*, by the Rt Hon Charles Booth, what he called "The Grand Inquest."

Charles Booth, modern interpreter of sociological science, was a shipowner of Liverpool. His scientific temperament and curiosity led him to study the structure and working of human society in London. His practical ideal was faith in the scientific method combined with altruistic service to man. Sound reason, a good conscience, will power and energy inspired his inquiry into the unsatisfactory social conditions obtaining amongst the poor, attributed variously to improvidence, ineptitude, self-indulgence or "original sin." Booth did not agree and asked himself: How do the people really live, and what is it they really want, or need, to render decent existence practicable ? Thus his exploration began in 1886, aided by a small army of school-attendance officers and other home visitors, and ended in seventeen volumes, a Domesday Book of the people of London at the dawn of the twentieth century. We all know that he found thirty per cent living at or below the level of bare subsistence, a condition leading inevitably to degeneration of body and mind. He also found that the Poor Law and Charity Organisation were inadequate remedies, but that collective organisation was a more likely one, while compulsory education up to adolescence, state labour exchanges, health and unemployment insurance, and old-age pensions might resolve the problem. He set to work accordingly and this historic book provided irrefutable evidence of the need for a social "national minimum" of subsistence and for collective efficiency, control, discipline and governance.

The evolution of social thought in the nineteenth century, to which Charles Booth's great work was such a splendid contribution, was well described in 1910, in the twelfth volume of the Cambridge Modern History:

> "The change that has come over the civilised world may be summed up in a phrase. What may be called our 'atomic' view of human society has been replaced by a more 'organic' conception. Three quarters of a century ago the dominant social philosophy was that of *laissez faire*. Though in England and some other countries arrangements were made to keep the starving from death, and to prevent actual brigandage and robbery by violence, what little collective action existed was undertaken grudgingly, and by way only of exception. The community as a whole assumed no responsibility for the individual. The pressure upon his will produced by the free competitive struggle would, it was assumed, if only 'let alone,' result in the utmost possible development of human happiness and human faculty. The current ideal of the social order was that of a congestion of warring atoms, the free competition of which would, it was quite confidently assumed, unconsciously result in the best attainable social state. The unit, it was said, was the family group, by which was meant, in practice, the male head of the family, the wife and children being scarcely recognised by the law as human beings, with rights and interests independent of those of the dominant adult male. By the beginning of the twentieth century we find an altogether different conception of society. The unit is no longer the family group, but the individual human being, whether newly born infant, child, adolescent, adult woman or male head of the household. And we no longer believe that 'beneficent private war' necessarily secures public ends."

FIRST WORLD WAR 1914–18

And so we come to the first World War. Its effect on the progress of social medicine was profound. The destruction of our young manhood made manifest the need to save life wherever possible, so in 1915 notification of births to the local medical officer of health was made compulsory and child welfare schemes officially inaugurated. Three years later the powers given to local authorities to provide means for the safeguarding of the health of mothers and infants were stabilised and extended. At the same time the medical inspection of all children attending secondary and continuation schools was introduced and the treatment of defects found in elementary school-children, till then optional on the part of local education authorities, was made compulsory. A scheme for the early diagnosis and treatment of venereal disease—made necessary by the great increase in the number of sufferers—was introduced in 1916 and in most areas the work was undertaken by voluntary hospitals with financial help from the Government and the major health authorities. In the same year welfare work in industry was given proper recognition and powers were granted to require its introduction in selected factories where the need was greatest. As soon as might be after the signing of the armistice Parliament created a Ministry of Health "for the purpose of promoting the health of the people throughout England and Wales," and the hopes of Sir John Simon and his fellow workers in the second half of the preceding century were thus finally realised. The changes in central medical administration consequent on the establishment of the new Ministry were not, it is true, so far-reaching as many desired but the step taken by Government was full of significance. Who can say what further changes may be effected as the outcome of this war?

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[1] The Royal Commission on Physical Training (Scotland) in 1903, the Interdepartmental Committee on Physical Deterioration in 1904, and a Departmental Committee on Medical Inspection and the Feeding of Children attending Public Elementary Schools in England, in 1905.

Shortly before the last war there had been established under the National Health Insurance Act a Medical Research Committee. In its origin it was designed to forward the objectives of insurance, but its admirable secretary, the late Sir Walter Fletcher, turned it at once to the medical emergencies of war with the result that it became truly national in its application and effect. This prompt opportunist application to the immediate medical necessities of the war had a touch of real genius about it, for it demonstrated that the design of this new research organisation was no merely academic study in abstract science but a living and dynamic power-house for the saving of human life. In the re-ordering of affairs that was inevitable after the war this committee became the Medical Research Council and its control was placed in the wise hands of the Lord President of the Privy Council, thereby freeing it from technical departmental interference and giving its sphere of operation boundaries no less wide than those of the British Empire itself. The Health of Munition Workers Committee, appointed in 1915 under the chairmanship of one of my distinguished predecessors in office, Sir George Newman, made a great contribution to the well-being of workers in factories and after the war became part of the Medical Research Council's organisation under the new title of the Industrial Health Research Board. Its findings regarding fatigue are as true now as they were twenty-four years ago and there is urgent need for their more general application.

BETWEEN WORLD WARS

The increase in tuberculosis that occurred in the last war made obvious the necessity of dealing with this disease as a national problem rather than as one for special attention among insured persons under the heading of "sanatorium benefit." Accordingly in the immediate post-war years the major local authorities were required to make adequate provision for the diagnosis and treatment of all sufferers from this great social disease. Again, as a result of the war there was an acute shortage of housing accommodation, so Government took an active part in stimulating building in every part of the country. Efforts were directed at first to make good the shortage of houses without much regard to the worst housed members of the community. Before long, however, the real public-health implications of housing came to be realised as never before and this country embarked on a programme of slum clearance and of rehousing the poorest of the people that, whatever its shortcomings, has been of inestimable benefit to health. Nor did social reform stop at this point. Discontent with the operation of the old poor law had been frequently expressed and change was inevitable. Under the late Mr Neville Chamberlain's guidance a sweeping measure of reconstruction was passed through Parliament in 1929 whereby our century-old boards of guardians, in themselves a great improvement on what had gone before, were swept away and their functions transferred to the councils of the counties and county boroughs. Thus the coordination of public health and of public assistance was brought about and the creation of a national hospital system, based on the fusion of voluntary and of local government effort, was made possible.

In the meantime medical education had not stood still though the changes introduced tended rather to complicate than to simplify the lot of the struggling undergraduate. The beginnings of two noteworthy movements may be detected in this connexion. First of all an insistent demand began to be made for the introduction of what has been called "the preventive outlook" into the medical curriculum and in the second place postgraduate education at last received visible recognition in the establishment of the two great London centres—the London School of Hygiene and Tropical Medicine and the British Postgraduate School. The influence of these two institutions, and still more of the currents that led to their appearance among the schools of the University of London, has yet to be realised.

Lessons of this War

What will be the probable effect on the progress of social medicine of the ordeal through which the world is now passing? So many nations are suffering in common in these days of trial that it is unthinkable they should not share in common whatever good the future holds in store. Of all the efforts to further international cooperation that followed the last war none achieved greater success than that made in the field of public health and the advancement of medical knowledge. Who can doubt that the same will still be true when these tragic events have spent themselves. But it is rather on the influence of the war years on our own people that I would dwell today, and here one can detect a marked difference, so far at any rate as the feelings of the medical profession are concerned, between this war and the last. Most of us who served in the period 1914–18 can recall how we looked forward to the time when we should return to the kind of life we had been leading before enlistment, to the practices or the appointments we had left, eager to get back to things as we knew them before the war clouds burst. Not so in this war. There is everywhere a conviction that great changes lie ahead of us and a desire so to plan the measures designed to meet the national emergency that some permament good may be derived from them when the world is once again at peace.

In the past we have prided ourselves on our adherence to precedent and on the gradual evolution of our schemes of social reform. Let me remind you of Tennyson's definition of England:

"A land of settled government,
A land of just and old renown,
Where Freedom slowly broadens down
From precedent to precedent;

Where faction seldom gathers head,
But by degrees to fullness wrought
The strength of some diffusive thought
Hath time and space to work and spread."

This may have been true in the spacious days of the nineteenth century, but is it true today? With the advances that have been made in human knowledge in recent years can we afford to proceed from precedent to precedent, and does not diffuse thought work and spread with a velocity undreamt of even a generation or two ago? We have to ask ourselves whether the speed at which we have lately been living can ever again be slowed down even to the prewar tempo; whether much of the liberty to which we used to refer with pride was not in fact rather a licence to disregard the effects of many of our acts of commission or of omission on the well-being of others; and whether a people that has experienced such an upheaval in its ways of living and of thinking will ever desire to return wholly to its former habits. There has been the most grave interference with the liberty of the subject, liberty of labour, liberty of movement, liberty of property and liberty to buy and sell even the most ordinary commodities of life, all of which has been accepted with hardly a murmur, rather at times with acclamation. We have indeed learned what the people of these islands will endure gladly under wise and courageous leadership It may be that some extensive programme of social reform, of which social medicine would be an integral part, will be introduced as an immediate post-war measure Who can say? For war, though a great destroyer of things worth preserving, may yet, almost overnight, open the door to progress and reform that in other times would have cost years of constant striving

HOSPITALS AND LABORATORIES

And so, in attempting even in the most general terms to indicate the nature of possible post-war changes, may I direct your attention to some of the far-reaching measures that have been adopted to meet the medical needs of the state of emergency that has already lasted for more than three years

First of all there has been developed throughout England, Scotland and Wales an Emergency Hospital Scheme Broadly, this scheme consists of utilising, improving and supplementing existing hospitals, which continue to be independently administered by their owning authorities, voluntary or municipal, and the majority of which are still concerned with their ordinary work among the local sick as well as with patients who fall within the scheme The Emergency Medical Service is the name given to the body of medical men and women enrolled and paid by Government for service under the emergency hospital arrangements

The scheme may be full of faults—those most intimately associated with it are the most ready to admit its defects—but it can, and does, accept responsibilities that neither the profession nor the hospitals in their former condition as a series of isolated units could ever have undertaken It has shown the value of linking together the various hospitals in regions of which the vital centres are the great medical schools And it is not merely the hospital administration that has been coordinated in this fashion, much more important has been the organisation of the medical staffs that has been brought about Consultants have been redistributed and their services made available in many places where such provision had formerly been wholly inadequate Voluntary hospitals and local authorities' hospitals have entered into the closest sort of association Some of our teaching hospitals are the welcome guests of institutions belonging to local authorities and are learning what a wealth of valuable teaching material they have gained thereby The medical staffs of local authorities, on the other hand, have come to realise how much they benefit from day to day contact with their colleagues from the teaching hospitals Many more whole-time appointments have been created in hospitals and in these appointments large numbers of medical men and women have found the opportunities they desired but which were denied them in the past It has been found possible in this scheme of hospital organisation to bring together in selected institutions cases of injury or disease requiring specialised forms of treatment, and thus we have got centres for plastic surgery, for neurosurgery, for head injuries, for rehabilitation and for neuroses Various methods of treatment, too, can be tried out on a grand scale and an estimate of their value obtained much more readily than would have been possible in prewar days Finally, many of the institutions themselves have been improved out of all recognition—"upgraded" in official jargon; operating theatres have been provided, additional wards have been built, fresh equipment has been installed Indeed, the Ministry of Health has itself added no fewer then forty-seven thousand beds to the total of those already provided by voluntary agencies and local government authorities From being a service originally designed to secure the treatment of service sick and of battle and air-raid casualties the Emergency Hospital Scheme has come to care for the medical needs of large groups of the civilian population—workers in war-time industries, evacuees of all sorts persons engaged in the various branches of civil defence and many others Fortunately we have not been called upon as yet to care for battle casualties on any very large scale and the hospital beds have therefore been placed at the disposal of the civilian population so far as has been found practicable One important result has been the virtual disappearance of many hospitals' waiting-lists

Laboratory services, confined in former days almost wholly to a few main centres throughout the country, had obviously to be greatly augmented to meet the needs of the emergency hospitals on the one hand and to deal with outbreaks of epidemic disease on the other During 1939 a scheme for an emergency public-health laboratory service was worked out in great detail and, a day or two before war was declared, staff and equipment were transferred to selected centres in England and Wales Each unit was ready to start work when the day arrived This epidemiological service, organised and managed by the Medical Research Council on behalf of the Ministry of Health, has been of the greatest help Skilled public-health laboratory workers are posted at key points throughout the country, able and willing not only to undertake the necessary technical laboratory procedures but also to go out into the field and assist in the control of outbreaks of disease and, better still, in the carrying out of large scale programmes of immunisation I hope this combination of bench work and field work will become a permanent part of our armamentarium against infectious disease In this work we have been helped in the most generous and skilful fashion by the American Red Cross-Harvard Field Hospital Unit, which with its association of wards, laboratories and teams of doctors and public health nurses has shown us the way in which epidemiological knowledge can best be applied in the study and control of outbreaks of infectious disease May I say, at this point, that this unit represents by no means the only medical war-time debt we owe to our professional colleagues in North America Our hospital pathological services have been similarly extended and, I hope, a closer association between clinicians and pathologists thereby established The days of a purely postal laboratory service are surely ended and, I trust, the hospital pathologist will have as useful a place in the ward and outpatients department as the public health bacteriologist in the school, the clinic, the residential nursery and the homes of the people

INFECTIOUS DISEASE

Great progress too has been made in protecting the children of this country against diphtheria Before the war efforts in this direction were haphazard and spasmodic but at the end of 1940 the Government undertook to issue free of charge to all local authorities an approved prophylactic against diphtheria This gave the necessary fillip to the movement for the control of this pernicious disease and since that date some three million children under fifteen have been dealt with under official schemes The numbers are not nearly large enough, but they are growing and we have as a goal before us the wonderful achievements of some of the great cities in Canada and the United States where diphtheria has become so rare a disease that difficulty is experienced in finding sufficient cases for the teaching of medical students Trials of a vaccine against whooping-cough are being conducted by the Medical Research Council and it may be that before long we shall find we have forged a weapon against one of the most fatal infectious diseases in very young children

A war-time increase in the incidence of tuberculosis was foretold and the forecast was unfortunately only too accurate The increase has made necessary a review of our methods of dealing with this disease—one of the greatest of all problems of social medicine The actual prevention of tuberculosis can be achieved only by a long and continuous attack on a number of social evils Our aim must be to secure higher standards of living, more satisfactory conditions of work, better housing, safe milk We can, however, seek to ensure the next best thing to actual prevention and that is the detection of the disease in its earliest and most treatable stages This is what we hope to do in the course of time by the wise use of the cheap, rapid and reliable methods of miniature radiography The part such methods can play must not be over-estimated, but that they can do much to sort out the cases that require further examination can hardly be denied Fortified by this belief the Ministry of Health has itself undertaken to see that as many sets of apparatus as possible are made available during war-time, and it is hoped that they will be put to good use by the profession Early detection by itself is hardly enough There must be adequate institutional accommodation for those who need it, reasonable maintenance for the family whose wage earner is undergoing treatment and a wisely planned scheme of rehabilitation recognised as an essential part of treatment itself. The need for a comprehensive scheme of this nature has been stated by the Minister of Health in the House of Commons and an effort will be made to put into operation such parts of it as existing conditions permit. The active support of the whole of the medical profession will be necessary if success is to be achieved.

NUTRITION

Another problem thrown into prominence by the war has been the maintenance of a satisfactory standard of national nutrition. It must be admitted that in the past, attempts to induce the people of this country to adopt a more health-giving dietary have not proved very successful. The creation of a Ministry of Food and the placing of the control of all foodstuffs in the hands of the Minister have, however, changed all this. There is now cooperation between the State Departments of Health, Food and Agriculture. The Cabinet has decided that it is the duty of the Minister of Health to advise on nutritional policy and that it is the business of the other two ministries, so far as is practicable, to give effect to this policy either by importing or by producing the foodstuffs required. Huge sums have been spent by the Ministry of Food on a programme of public education with the object of explaining the system of rationing and of giving information as to how the available foods may best be used. In this educational effort the Board of Education, the local authorities and the medical profession have played an important part. Indeed there is nothing more praiseworthy than the efforts that have been made to secure the provision of a midday meal and of milk at school for the largest possible number of children. When the difficulties of premises, equipment and staff are taken into account, the fact that on five days a week some three quarters of a million school-children sit down to dinner together and more than three and a half million are given milk in school must be regarded as a real achievement. The various schemes for the provision of communal meals are contributing in no small measure to the maintenance of a reasonable standard of national nutrition as are the special priorities, in respect of milk and other foods, granted to mothers, young children and invalids. Surveys of groups of the population are being conducted in various parts of the country and for some of these the new Institute of Social Medicine at Oxford will act as a centre where results can be analysed and new methods tested. In this work I have to acknowledge the great help given by the Rockefeller Foundation who have generously provided staff, money and equipment which have made possible this scheme for measuring the effect on the health of our people of the necessary war-time restrictions in diet. At last, then, we have obtained, as a result of the necessities of war, what has been lacking in the past—a real nutritional policy which includes collaboration between the central government departments concerned, a programme of public education and a system of checking results by means of local surveys. Surely these gains in time of war will not be lost in times of peace.

The war has given a new impetus to all forms of health education and the ordinary citizen has responded well to the needs of the times as expressed in the slogan—and these are the days of slogans—"Help to keep the nation fighting fit." The public are more ready than in peace-time not only to listen to simple and often repeated advice, but even to act on it. This quickening of popular interest is reflected in, and stimulated by, the increased publicity which the press, the BBC and the cinema are giving to information regarding health. More than ever before health, in contradistinction to disease, is news, and prevention is acquiring some of the drama of cure. It has therefore been made easier for both central and local authorities considerably to extend their efforts to supplement the educational work carried out so effectively and so unostentatiously in the past by private practitioners, medical officers of health and, above all, by health visitors.

We have enjoyed for over a century the benefits of a Registrar-General's office with a national system for the collection and publication of vital statistics. Causes of death have been readily ascertainable, not so, however, causes of morbidity. An attempt is now being made, through the agency of the Emergency Hospital Service to obtain returns from hospitals of causes of morbidity compiled in accordance with an approved classification. If hospital staffs cooperate willingly in this effort, and there is no reason to anticipate otherwise, we shall have at least means of determining not only the conditions from which hospital patients die but also the conditions from which they recover. Such information is essential not only to the planning of an adequate hospital system but also to the proper understanding of many of our communal medical problems.

THE FUTURE

These then are some of the lessons we are learning in the stress of war. Shall we remember them when peace comes? There are signs that we shall. First of all we have the following statement of the Government's postwar hospital policy made by the Minister of Health in the House of Commons on Oct. 9, 1941:

> "It is the objective of the Government as soon as may be after the war to ensure that by means of a comprehensive hospital service appropriate treatment shall be readily available to every person in need of it. It is accordingly proposed to lay on the major local authorities the duty of securing, in close cooperation with the voluntary agencies engaged in the same field, the provision of such a service by placing on a more regular footing the partnership between the local authorities and voluntary hospitals on which the present hospital services depend. The Government recognise that to achieve the best results and to avoid a wasteful multiplication of accommodation and equipment it will be necessary to design such a service by reference to areas substantially larger than those of individual local authorities. It will be the aim of the Government also to avoid overlapping and uneconomical expenditure by securing the provision of the more highly specialised services at teaching hospitals and other centres selected to serve these wider areas, and by arranging for a proper division of function between hospitals in these areas.
>
> With regard to the financial aspects of the Government's proposals, it is their intention to maintain the principle that in general patients should be called on to make a reasonable payment towards the cost whether through contributory schemes or otherwise. In so far as any new burden may be thrown upon local authorities in providing or maintaining hospital accommodation, or in contributing towards the expenditure of voluntary hospitals, a financial contribution, the extent of which will be a matter for further consideration, will be made available from the Exchequer. Special arrangements for dealing with the teaching hospitals by way of increased educational grants are in contemplation."

Surveys of hospitals are already being conducted in the London area and in the north-west of England; others are about to start with the active cooperation of the Nuffield Provincial Hospitals Trust. These surveys are in the main fact-finding, but their findings should determine in no small measure the pattern of hospital coordination over a given area. The quality of service rendered by hospitals depends almost entirely on the training, skill and experience of those who staff them and it is gratifying to know that this college, with its two sister colleges, has assumed the responsibility of laying down criteria for the training and status of future consultants. A list of consultants is in course of preparation and it is hoped that the colleges will advise as to how these consultants should be distributed throughout the country so that their services may be readily available both to the public and to the general body of the profession. This is no easy task but it is one the colleges are peculiarly fitted to perform.

An interdepartmental committee has been appointed to report on the organisation of our medical schools and on the facilities available for clinical teaching and research. If educational grants are to be made to teaching hospitals the Government must be satisfied that they are so staffed, equipped and administered that those who are privileged to pass through their laboratories, lecture-rooms and hospital departments will receive the best training and experience this country can offer. Nothing less will suffice if the profession is to give the service to which our people are entitled. This college has always rightly regarded medical education as one of its main concerns and it is a hopeful sign that the President has appointed one committee to study the medical curriculum and another to advise on the scope of social medicine and the manner in which the subject may best be presented in our medical schools In this connexion I should like to pay a tribute to the forward policy of the University of Oxford in establishing a Chair of Social Medicine and in particular to the wisdom the Nuffield Provincial Hospitals Trust has shown by its generous support of the university in this venture The Institute of Social Medicine which the Trust has brought into being will, I feel sure, give reality to what has so far been little more than a dream in the minds of some of us and will act as a profound stimulus to other educational centres The great interest which Lord Nuffield has shown during recent years in medical education and research is one of the most heartening signs of our time In the past it has been the hospitals of the country that have in the main benefited by the generosity of public-spirited citizens Too few gifts have come the way of our centres of medical education and research In this we compare unfavourably with North America where private benefaction has time and again enabled work to be undertaken and experiments in education planned that would have been impossible without such aid Indeed, American generosity has not been confined to the North American continent, we owe much to it in this country May I quote only one example out of many After the war of 1914–1918 the whole subject of postgraduate medical education in London was reviewed by a committee of which the Earl of Athlone was chairman This committee recommended that two schools of postgraduate study should be established, one devoted to clinical work and the other to preventive medicine The fact that the London School of Hygiene and Tropical Medicine opened its doors as early as 1929 was entirely due to the provision by the Rockefeller Foundation of the whole of the sum required for site, building and equipment It is unlikely that the opportunity for private benefaction will wholly disappear as a result of this war and I may be permitted to express the hope that some part at least of the moneys so made available will be directed towards the training of those who have the physical, and in large part the mental, well-being of the people in their special charge

Side by side with advances in medical education I hope to see improvement in the training and conditions of service of the nursing profession As earnest of its own goodwill in this connexion the Ministry of Health has set up within its own establishment a nursing section in which nurses are given status comparable with that of medical and administrative officers In future, therefore, all matters concerning institutional or domiciliary nursing will be reviewed in the central government department by members of the profession itself

Another sign of great significance has been the formation by the British Medical Association of its Planning Commission, and, still more, the character of its Interim Report Surely we are entitled to read into this report a realisation on the part of the medical profession that their continued existence as a series of isolated units is in the interests neither of themselves nor of the public they serve, that if private practitioners are to take their proper place in the conduct of public medical services the medical profession will have to submit to some agreed measure of reorganisation, and that the better “ utilisation of medicine by the State,” to which the distinguished first medical officer in central government so eloquently referred, must form an essential element of any post-war policy of social reconstruction

These three proposals for a coordination of hospitals, for the better organisation of the medical profession and for what we hope will be a simplification of the medical curriculum, coupled with greater emphasis on the social aspects of medical practice, are all inter-related They are the intimate concern of all branches of the profession and they can be given effect to only with the help and goodwill of the profession

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Bacot Lecture —The first Bacot memorial lecture of the Lister Institute of Preventive Medicine will be given by Prof P A Buxton, at the London School of Hygiene, Keppel Street, W C 1, on Friday, Oct 30, at 3 PM He will speak on Bacot’s work on the louse and some of its recent developments

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TRYPANOSOMIASIS TREATED WITH ‘PENTAMIDINE’

T L Lawson, M B LPOOL, D T M & H

This paper records the treatment of a series of 53 cases of Gambian trypanosomiasis with 4 4 diaminodiphenoxypentone (‘ Pentamidine ’ or M&B 800) Altogether 57 cases were treated, but 4 of these were not re-examined after a lapse of time since conclusion of treatment, hence I have omitted them The cases were not selected, but are the first 53 diagnosed in the West Nile district of Uganda in 1941 This work has been carried out under slightly difficult conditions, in a primitive part of the world Most of the cases dealt with probably had not been infected for longer than 3–4 months at the most, since the entire population is examined for sleeping sickness once every 3 months

On arrival of a case after the history had been taken, clinical examination was carried out Often patients gave no history of any illness, sometimes their account was genuine but sometimes they feared possible consequences if they admitted any complaint Headache, pains all over the body, “ not feeling well,” tiredness and sleeping during the day were the commonest symptoms Enlarged cervical glands was the most usual sign encountered, often these glands were hard, not soft as is usually stated, more rarely the face was puffy Fever I never found, rises of temperature from other causes are so common with Africans that one would not get a reliable history of fever due to sleeping sickness Rashes were never seen As about 90% of the population have an enlarged spleen that sign is no help in diagnosis In advanced cases in adults tremors of the tongue, a Parkinson-like rigidity and more rarely a cheerful garrulous madness were the most usual signs In similar cases in children choreiform movements were common More rarely one saw, in all ages, the onset of true sleepiness in which a patient will just go to sleep on a stool or any odd place Absence of knee-jerks is a late phenomenon and Kerandel’s sign was never elicited

After clinical examination the enlarged cervical glands were punctured, the juice being examined under the ⅙ in lens for living trypanosomes The following examinations were also performed red and white blood-cell count, estimation of hæmoglobin and colour-index, differential white-cell count, and “ separation of the blood ” test Lumbar puncture was carried out, and a cell count was done on the cerebrospinal fluid We were unable under the conditions prevailing to perform accurate protein estimations on the CSF Instead we used the simple Nonne-Apelt reaction with saturated ammonium sulphate for testing for excess of globulin Lastly the CSF was centrifuged and the deposit examined for trypanosomes after staining with Leishman stain A thin film of the blood was also examined for trypanosomes Out of 49 cases with positive gland puncture only 2 had trypanosomes in the thin film In some cases the sedimentation-rate was estimated to see if it served as a guide to the degree and rate of cure

At the outset we experimented with auto-agglutination of the blood in the hopes that it would serve in the same manner as a sedimentation-rate, but we found it totally unreliable

In the first 20 cases we carried out the ordinary triple centrifuge method of looking for trypanosomes in the blood In all of these trypanosomes had been found in the glands, but in only 2 was the test positive With the method of separation of the blood, trypanosomes were found in 7 cases out of 33 which had the parasite in the gland juice

For this test 8 c cm of blood is taken and diluted with 2 c cm of 3 8% sodium citrate (these proportions were chosen because a portion of the same blood serves for the sedimentation rate) The mixture is left standing for 2 hours in a narrow test-tube The plasma just above the level of the top of the sedimented cells is taken off, a film of the plasma made and stained with Leishman stain

TREATMENT

Pentamidine was started after all tests were complete, the drug being given intravenously daily Every day gland puncture was performed until the gland juice was negative for at least 2 consecutive days After the third injection all the investigations mentioned above were repeated except the sedimentation-rate After the tenth injection, which completed the course for most of the patients treated, the investigations were again repeated Also if a patient had a second course, the process was repeated once more at the conclusion. Finally all the cases were re-examined 2–3 months after the end of treatment

Facilities for weighing the patients not being available the dosage was regulated in rather a rough manner according to age Patients between 6 years (our youngest patient) and 10 were given 0 05 g at each injection Patients of 11 and over were given 0 1 g at each injection Of the 53 patients in the series 13 had 10 injections (a total of 0 5 g for those under 10, and 1 g for those over 10), 6 patients had 20 injections (1 and 2 g for the two age-groups), one man of larger build than average had 10 injections of 0 1 g followed by 10 of 0 2 g (a total of 3 g), one woman with a heavy infection had 3 injections of 0 1 g followed by 5 of 0 2 g, but she was so weak after this that she was unable to get out of bed, 2 patients had 6 injections, one getting a total of 0 3 g and the other 0 6 g In one patient (one of the 4 not followed up) the dose was gradually increased at each injection, after 0 2 g he was not uncomfortable, so the dose was increased to 0 5 g, after this he collapsed suddenly and was almost pulseless for about ¼ hour, after which he recovered with nothing worse than a headache

All the injections were given intravenously daily, pentamidine being dissolved in sterile distilled water The drug is said to be soluble to the extent of 40 mg in 1 c cm of water at 37° C Our experience has not confirmed this At the outset we dissolved 100 mg in 5 c cm of water, but this took such a long time that we increased the water to 10 c cm, so that the strength was 10 mg per c cm of water In no case was there any evidence of perivenous inflammation Since it is unlikely that about 600 intravenous injections (some to children) were given perfectly, the drug cannot have any seriously harmful effect on the subcutaneous tissues

CLASSIFICATION AND RESULTS

It is impossible to classify reliably cases of sleeping sickness on clinical manifestations alone Hence each factor has been taken separately and the total effect summed up

On examination 2–3 months after the end of treatment, 41 patients were clinically cured, 3 much improved, 4 improved and 4 unaltered or worse One had died Thus on purely clinical assessment only 5 out of 53 were totally unaffected by pentamidine Judged by gland puncture, 4 cases were negative before, during and after treatment Of the remaining 49 in the series, negative results to gland puncture were found after the first injection in 31, after the second injection in 12, after the third injection in 5 and after the fourth injection in one All the cases, once they became negative to gland puncture remained so At later examinations they were all either still negative or had no palpable glands Hence as regards gland puncture 100% cure could be claimed

Triple centrifugalisation and separation of the blood yielded 9 positives, trypanosomes were also present in 2 thin blood-films in this group After 3 injections (the test was not done every day) all of these were negative and never became positive again

On results of examination of the CSF, cases were classified as follows

Group	Cells per c.mm CSF	Cases in group	Cases with excess glob	Cases with trypanosomes +
1	Under 10	8	0	0
2	10–80	22	3	0
3	80–200	7	3	2
4	Over 200	16	16	5

The 2 cases with trypanosomes present in group 3 showed an unexplained rise of cells, after the third injection, to over 200 per c mm In all 7 cases with trypanosomes the organisms disappeared during treatment, after 3 injections in 4 cases, after 10 injections in 2 cases and after 20 injections in 1 case One case relapsed after 2 months, trypanosomes being again found in the CSF, this was the only case out of the 53 in which trypanosomes were found in any situation on re-examination

As may be imagined, treatment had no significant effect on the CSF cell-count of cases in group 1 Of the cases in group 2, 10 out of 22 showed a reduction in cell-count while under treatment One case refused further lumbar punctures, and one case was not lumbar punctured (owing to advanced pregnancy) until she was re-examined, when she had 3 cells per c mm only In one case there was no alteration during treatment Some rise of cells above the figure at the end of treatment was found in 7 of these cases at re-examination, but this was not great In group 3, 5 cases out of 7 showed a reduction of CSF cells during treatment The other 2 cases actually showed an increase in cells during this period These 2 cases both had trypanosomes present in the CSF When they were re-examined 4 cases out of the 7 showed an increase of cells over and above the original count In group 4, 11 cases out of 16 showed a reduced count on the completion of treatment In one the count was unaltered and in the other repeated attempts at lumbar puncture failed On re-examination 5 showed a slight increase in the cell-count and 5 an increase over and above the original count One case in this group died after the course of treatment was completed

It is interesting to note that in 12 cases the clinical findings and the results of CSF examination disagreed Of the cases treated, 3 had relapsed after having been treated with 'Antrypol' (BDH) and tryparsamide 2 years ago They had received 3 injections of 1 g of antrypol and 7 injections of 3 g of tryparsamide Of these cases, 2 showed no improvement except that the CSF was cleared of trypanosomes in one The third case improved remarkably in all respects

Case 1—A man of 23 with no complaints and no signs except enlarged cervical glands On March 4, 1941, gland puncture positive Urine, no albumin CSF, no trypanosomes or excess globulin, cells 5 per c mm Triple centrifuge method no trypanosomes On March 6, given pentamidine, 0 1 g Dose repeated next day, gland puncture positive. March 7, dose repeated, gland puncture negative "Separation of blood" test no trypanosomes CSF no trypanosomes or excess globulin, cells 6 per c mm From March 11 to 17 he received 0 1 g pentamidine daily March 18, clinically well, gland puncture negative Separation of blood no trypanosomes CSF no trypanosomes or excess of globulin, cells 8 per c mm Urine, no albumin March 19, clinically well No palpable glands Separation of blood no trypanosomes CSF no trypanosomes or excess of globulin, cells 9 per c mm Blood counts during the illness were as follows

Date	Red cells	Hb (%)	CI	White cells per c mm	Differential count (%)				
					P	L	H	E	T
Mar 4	3 248,000	50	0 78	7800	50	39	6	5	0
, 10	3,600,000	60	—	8200	56	26	6	10	2
,, 18	3 816,000	70	—	11,200	43	40	1	4	2
, 19	4 520 000	85	—	10,800	50	44	1	5	0

P = polymorphs, L = lymphocytes, M = large mononuclears, E = eosinophils, T = transitionals

Case 2—A youth of 19 who had had headaches for 3 months and was sleeping a lot during the day Temperature and pulse normal Looked "dopey", tremors of tongue and fingers, some rigidity of expression, speech normal No other signs in CNS except exaggerated knee jerks Cervical glands enlarged March 1, gland puncture positive Separation of blood negative CSF trypanosomes present, excess globulin, cells 170 per c.mm Urine, no albumin Pentamidine 0 1 g given daily on March 6, 7 and 8 Gland puncture positive on March 7, negative on March 8, and again on March 9 when the separation of blood test was negative and the CSF still contained 760 cells per c.mm and excess globulin, but no trypanosomes, urine, no albumin From March 11 to 17 he was given pentamidine 0 1 g daily March 18, headache gone, tremors still present, and still looked dull, glands not palpable CSF no trypanosomes, excess globulin, cells 560 per c.mm Urine, no albumin On May 15 headaches were

Date	Red cells	Hb (%)	CI	White cells per c mm	Differential count (%)					
					P	L	M	E	T	B
Mar 1	3,600 000	50	0 7	8400	51	38	3	8	0	0
,, 9	3,384,000	50	—	9800	48	36	9	7	0	0
18	3 808,000	70	—	8600	48	29	5	14	3	0
May 15	3,344,000	80	—	8800	41	40	6	8	5	1

B = basophils

present, patient looked and felt the same, tremors severe, gland puncture negative CSF trypanosomes present, excess globulin, cells 450 per c mm Blood counts during the illness were as shown above

CASE 3—A boy of 10 years without symptoms, only sign, enlarged glands Temperature and pulse normal March 4, gland puncture positive Triple centrifuge of blood negative CSF cells 30 per c mm, no trypanosomes, and no excess globulin throughout illness Urine never any albumin present March 6, 7 and 8, pentamidine 0 5 g daily Negative gland punctures on March 7 and 8 and on March 10, when results of triple centrifuging of blood were negative and CSF contained 17 cells per c mm From March 7 to 11 he received pentamidine 0 05 g daily On March 18 he was clinically well, gland puncture and separation of blood test, negative CSF cells 8 per c mm March 25, clinically cured No glands palpable, separation of blood, negative CSF cells 15 per c mm Blood counts during illness were as follows

Date		Red cells	Hb (%)	CI	White cells per c mm	Differential count (%)					
						P	L	M	E	T	My
Mar	4	4,224,000	60	0 72	7200	33	53	12	2	0	0
,,	10	4,376,000	70	—	9400	31	48	12	0	0	1
,,	18	4,000,000	80	—	10,600	20	56	4	19	0	1
,,	25	4,552,000	75	—	7000	24	51	5	18	2	0

My = myelocyte

CASE 4—A girl of 10 years who had had pains all over the body for a month Sleeping much during the day, severe headaches Temperature and pulse normal Seemed normal mentally, severe tremor of tongue and fingers, enlarged cervical glands March 27, gland puncture positive Separation of blood, negative CSF trypanosomes present, excess globulin, cells 990 per c mm Urine no albumin throughout Pentamidine 0 5 g given on March 29, and again on March 21 and April 1, on both of which days gland puncture was positive April 2, gland puncture negative, separation of blood, negative CSF trypanosomes present, excess globulin, 764 cells per c mm From April 4 to 10 given 0 5 g of pentamidine daily April 19, no pains, tongue still slightly tremulous, gland puncture and separation of blood negative CSF no trypanosomes, excess globulin, cells 690 per c mm June 23, feeling very well No pains or headache Working in fields Not sleeping during day, no palpable glands, no tremors Separation of blood, negative Blood counts during treatment were as follows

Date		Red cells	Hb (%)	White cells per c mm	Differential count (%)				
					P	L	M	E	T
March	27	2,544,000	80	7800	55	30	7	7	1
April	2	2,920,000	80	6600	25	56	9	6	4
,,	4	3,496,000	80	8200	35	57	2	6	0
June	23	3 822,000	90	6800	40	40	15	5	0

In this series of cases there are two complete failures the case which died, and case 2, recorded above Added to these are 11 of the more advanced cases which—though not complete failures or relapses—cannot be claimed to the credit balance of the drug A double dose was given to 6 cases (i e, a total of 1 g to those under 10 and 2 g to those over 10) In all of these cases the CSF contained over 200 cells per c mm, and trypanosomes were present in the CSF of 3 All showed a reduction of cell-count and disappearance of trypanosomes while under treatment On re-examination 4 had more cells per c mm of CSF than at the original count, of these, 2 were clinically unchanged, 1 improved and 1 clinically cured Of the other 2, there was a slight increase in cells in 1, and in the other the cell-count remained low, both appeared clinically well One case had a treble dose (3 2 g in all), trypanosomes disappeared from his CSF, and his cell-count fell under treatment, but on re-examination it was found to be higher than it had been originally Clinically he was much improved Of 2 patients who had just over half the regular dose 1, an adult, was clinically cured, but as she refused a second lumbar puncture the effect on her CSF was unknown (she had 73 cells per c mm in the original count) The other, a child, was much improved clinically, her CSF cell-count was 560 per c mm before treatment, 280 at the end of treatment and 380 on re-examination

The sedimentation-rate was done in 7 cases, using the Westergren technique, before and after treatment and on re-examination In the table the rate at the end of treatment is omitted because in all cases it was almost identical with that before treatment was begun Figures at the end of 1 hour only are given

SEDIMENTATION-RATES BEFORE AND AFTER TREATMENT IN 7 CASES

Case	Before	After	Clinical result	Pathological result
5	140	90	Cured	Cured
6	113	78	,,	,,
7	125	50	Impr	Impr
8	118	141	Cured	Cured
9	46	55	Not impr	Some impr
10	110	100	Cured	Impr
11	40	7	,,	Cured

All the rates are very high, a high proportion of the patients had malaria and worm infestation as well as sleeping sickness, and it is not easy to say how far the high rates were due to concurrent infection Since in two cases (8 and 10) the results do not correlate well with the clinical and microscopic findings, I do not think that much reliance can be placed on this test

TOXIC EFFECTS

In 36 cases (67 9%) some immediate toxic manifestation followed injection of the drug In order of frequency these were increased pulse-rate, the rate sometimes being almost doubled (often the only sign), feeling of heat all over the body, preceded by a feeling of the drug passing all over the body, itching followed by an almost uncontrollable scratching, especially of the genitalia, nausea and vomiting, giddiness, shivering We were able greatly to reduce the tendency to nausea and vomiting by making the patients take copious draughts of cold water while the drug was being given In a few cases a slight fall of systolic blood-pressure was recorded One case, given 0 5 g of the drug at one injection had a complete collapse resembling surgical shock He was almost pulseless for about a quarter of an hour, but recovered rapidly All the symptoms mentioned above lasted a few minutes only, and were less severe after successive injections In one woman, however, the effect was cumulative, after five injections of 0 2 g she became so weak that she was unable to get out of bed, she regained her strength in two days when the drug was stopped Another woman who was 7½ months pregnant was given a full course (10 injections of 0 1 g) with no undesirable results, she gave birth to a healthy child six weeks later A few patients, several minutes after the injection, developed headache, aching in the bones and colicky abdominal pains No jaundice or other signs of liver disturbance were seen Five cases had a trace of albumin in the urine at the end of treatment, *no casts were present* Of these, 1 had albumin in the urine before treatment was begun Actually, 6 other cases had albumin in their urine before treatment was started, in 5 of these it cleared up before the end of treatment The possibility of any renal damage is obviously low

There was little change in the red-cell count or hæmoglobin, in a few cases there was some decrease of the anæmia which was common to most cases In 9 cases leucopenia developed, the most serious showing a white-cell count of 7600 cells per c mm before and 3200 after treatment In 15 cases there was leucocytosis, the maximum figures being 5200 white cells per c mm before and 14,800 after treatment In 28 cases (52 8%) there was a tendency to relative agranulocytosis, in 7 cases this was partly or completely compensated for by a generalised leucocytosis

Typical figures in different cases were as follows

	Polymorphs (%)				
Before treatment	70	62	49	33	50
After ,,	45	31	31	20	29

In 9 cases there was leucopenia of agranulocytic type, in 1 case the polymorphs fell to 650 per c mm On re-examination the differential white-cell count had returned to normal in all except 8 cases in these some slight reduction of polymorphs was still evident A double course of the drug increased the tendency to agranulocytosis, but at most by 10%

CONCLUSIONS

The following facts are to the credit of pentamidine It produces a rapid peripheral sterilisation of the blood and gland juice

Treatment is complete in 10 days instead of 10 weeks, as with other drugs available, this is extremely important, from the point of view of the patient and for the preventive medical aspect

Toxicity is low, especially in comparison with tryparsamide (which is responsible for many cases of blindness in Africa) The effective dose is not more than half the toxic dose and probably almost a fifth the lethal dose

On the debit side are its lack of success when the examination of the CSF shows serious CNS involvement When the cell-count in the CSF is above 80 per c mm, it is probably safer to use one of the pentavalent arsenicals Some cases with counts above that figure were cured, but others were not

It is not safe to base too much reliance on the analysis of a mere 53 cases, but it does seem that this is probably the best drug so far produced for the early cases of sleeping sickness If it is used, however, lumbar puncture should be done in all cases, and no case with a CSF cell count of 80 per c mm or more should be given pentamidine unless it can be carefully followed up Control differential white-cell counts during treatment are advisable but not absolutely essential if dosage is reasonable It is not practicable to give exact dosage per lb of body-weight of the patient, since in Africa treatment is often in the hands of people who cannot calculate such niceties Our rough method probably suffices in all but the most civilised surroundings

I wish to thank Mr P Muganwa, my assistant medical officer, and Mr J Muwanga, my laboratory orderly, for their help, and the Hon Director of Medical Services of Uganda for permission to publish this paper

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FEBRILE REACTIONS AMONG SMALLPOX CONTACTS

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THE outbreak of variola major in Glasgow, and the conversion of this hospital for the time being into a reception house for contacts, gave us the opportunity to observe febrile reactions among these persons and compare them with those recorded by other observers Between June 27 and 30, 1942, 92 contacts were received —22 men, 28 women and 42 children under fourteen years, 50 had had close association with a smallpox patient over periods of three to eight days, 27 had less intimate exposure but lived in the same house as a patient, in 15 contact was limited to one or two occasions only All contacts were vaccinated on the day of admission to the reception house, with success in 43, 29 who showed little or no response after several days were revaccinated successfully, while 20 proved insusceptible to the vaccinia virus It was often noticed that a second attempt at vaccination appeared to activate the earlier insertion which till then had shown no sign of activity In contrast to more normal times, there were no objectors, conscientious or otherwise, to vaccination

No fewer than 40 contacts showed febrile reactions during the period of quarantine, of which 30 were clearly due to vaccinia and 2 to variola, while 8 formed an observation group that presented some difficulty in diagnosis All other contacts remained well except a child of one year who developed a mild chickenpox without rise of temperature and—an unusual event—infected a nurse with this disease in a severe form

Vaccinia —The onset of pyrexia varied between the 6th and 13th day after vaccination, in 11 cases being on the 10th day Its duration was from one to three days, save in four instances where it was prolonged to the 4th or 5th day In five the temperature reached 101° F or over Vaccinia was the obvious cause of these reactions, the local lesion being sometimes very severe with much œdema of the arm and painful swelling of the axillary glands Women tended to react more acutely than men and children, for a number of them had never been vaccinated before No example of generalised vaccinia or other eruption was observed

Variola —Smallpox appeared in 2 contacts, as follows

CASE 1 —Girl, aged 14 yr, infected from her father who had been ill for 7 days before removal to hospital Child vaccinated in infancy and again successfully on admission to reception house on June 29 On July 6 her temperature rose to 100 8° F with no symptom other than headache On July 8 it fell to 99 6° F, and four macules were seen on cheek (2), wrist and leg By the morning of July 9 the face spots already showed vesiculation, while the others were hard papules The child was notified and removed, her mother (also a contact) protesting bitterly that these heat spots were quite unlike her husband's eruption Such a mild infection in a person not under observation might easily have escaped detection

CASE 2 —Girl aged 20 yr A close associate of her sister who had been ill for five days and was regarded at first as a case of chickenpox She was admitted on June 30 and successfully vaccinated, no previous vaccination On July 8 her temperature rose rapidly to 101 4° F and the classical symptoms of shivering, headache, backache and vomiting were present On July 10, when her temperature reached 104 6° F after a severe rigor, her forehead was covered with a fine papular rash and three papules were seen on the right forearm and one on the left palm She was notified and removed When seen by us four days later in the smallpox hospital, she had a dense confluent eruption with no evidence of modification by vaccination She died on the 15th day of eruption

Observation group —The following 8 contacts with febrile reaction presented doubtful features and were isolated on suspicion of variola

CASE 3 —Woman, aged 28 yr, had 2 days' fever beginning on the 10th day of quarantine, with maximum 102° F Vaccination + Complained of headache Evidence of acne to which she is subject On the 12th day a few fresh macules appeared on brow and shoulders, they remained for some days without developing

CASE 4 —Girl, aged 3 yr, had 2 days' fever, beginning on the 10th day of quarantine, with maximum 99 8° F Vaccination + On the 12th day four discrete papules appeared on her hand, leg and abdomen (2), which lasted only 24 hours and showed no development

CASE 5 —Boy, aged 4 yr, had 2 days' fever beginning on the 7th day of quarantine, with maximum 100 8° F Vaccination + No complaint Two transient macules on face and thigh several days later

CASE 6 —Boy, aged 13 yr, had 6 days' fever beginning on the 7th day, maximum 101 2° F Vaccination + +, with swollen, tender axillary glands No other complaint One macule on cheek noted on 1st day of fever, it soon faded

CASE 7 —Boy, aged 2 yr, had 6 days' fever beginning on the 8th day, maximum 102° F Vaccination + Has scabies On the 12th day fresh papules were seen on trunk (6), arm (2), face (1), they showed no development

CASE 8 —Woman, aged 27 yr, had 5 days' fever beginning on the 9th day, maximum 100 4° F Vaccination, slight reaction No complaint Has scabies Papules appeared on the 12th day on brow (2), trunk (3) and forearm (1) Next day those on brow and forearm were hard and papular, all gradually subsided without vesiculation

CASE 9 —Man, aged 42 yr, had 2 days' fever from 12th day, maximum 102° F Vaccination, slight reaction Headache and shivering On the 14th day a few spots appeared on forehead which lasted for two or three days, becoming hard and papular, but showed no further development

CASE 10 —Boy aged 17 yr, had 6 days' fever from 8th day, maximum 101 4° F Vaccinated on the 3rd day of exposure but without effect till a second vaccination on the 7th day activated the first insertion The local reaction was not enough to account for the degree of fever His temperature rose sharply to a maximum of 101 4° F and remained fairly high for five days He was pale, tired looking and drowsy but made no complaint at any time Chest, abdomen and urine were negative On the 3rd day of fever, 3 spots were observed on the soft palate closely resembling the lesions of chickenpox in that situation They had the appearance of ruptured vesicles A few hours later they were less evident, and next day when we expected to find a smallpox exanthem there was no trace of them or of eruption Three macules made their appearance on the face on the 5th day, however, when the temperature was falling On the 6th day one of them was hard and papular and two fresh macules were seen over the scapula and on the forearm By the 7th day the boy's temperature was normal and the spots had disappeared without trace

DISCUSSION

The difficulty of deciding what importance to attach to a few scattered spots is not reduced when the subject already suffers from acne or scabies In three patients the new lesions observed might well have been due to one of these diseases On the other hand, the tendency of the spots to appear on the second or third day of fever is noteworthy We formed the opinion that the eruption in cases 3–7 was not variolar and that the fever was attributable to vaccinia Patients 8 and 9 had been vaccinated on the 5th and 7th day respectively of exposure to smallpox, but the general reaction as indicated by the temperature chart seemed out of proportion to the local lesion on the arm Both had macules on the brow which developed into hard papules , one had headache and shivering Case 10 showed very suggestive lesions on the palate Could these cases possibly be examples of smallpox very much modified ? We were inclined at first to think so , but since similar rashes and symptoms were occurring in the city after vaccination it became apparent that the diagnosis of modified smallpox could not be upheld, and the patients were not notified or removed to the smallpox hospital

Chalke[1] describes maculopapular eruptions following vaccination, but does not associate them with any rise of temperature He mentions that such rashes are often accompanied by urticarial or erythematous patches and regards them as akin to serum rashes None of the doubtful eruptions observed by us appeared to come within this category Conybeare[2] describes febrile illness in 7 of 16 contacts of a case of variola Each patient had headache, shivering and muscle or joint pains, with fever lasting 2–7 days and maximum 101°–103° F From his description, one was clearly a case of modified smallpox None of the others had a suggestive rash All but one had been revaccinated, and their illness may have been due to vaccinia But it is significant that the unvaccinated contact suffered from the same group of symptoms, so that the possibility of variola cannot be ignored Bowe[3] recently described three examples of febrile illness among contacts None had an eruption, but headache and backache were prominent in two Temperatures rose to 101° F and fever lasted for 1–4 days No revaccinations had been done and Bowe seems justified in regarding them as possible cases of modified smallpox

The conclusions we have arrived at by the study of these groups of cases are these (1) Smallpox may be by no means easy to recognise even in known contacts under constant observation (2) Careful discrimination is required to decide whether febrile attacks in contacts are due to vaccinia or variola (3) In a newly vaccinated person vaccinia is by far the likeliest cause of fever with a sparse eruption, but even a few spots showing the typical development, as in case 1, may be sufficient to indicate variola with certainty (4) When vaccinia can be ruled out, a short febrile illness, with or without transient spots, occurring in the second week after exposure offers presumptive evidence of variola

SUMMARY

Febrile reactions in 40 smallpox contacts were found to be due to vaccinia in 30 cases and to variola in 2 The remaining 8 were less easy to classify, but all were finally relegated to the vaccinia group

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[1] Chalke, H D *Lancet*, 1931 i 578
[2] Conybeare E T *Ibid*, 1939, i, 813
[3] Bowe, J C *Ibid*, 1942 ii 38

TOXIC BLOOD-LEVEL OF SULPHANILAMIDE FROM LOCAL APPLICATION

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THE following case seems worth recording in view of the high level of free sulphanilamide reached in the blood after local application to burned areas.

The patient was admitted to hospital four hours after he had been burned by an explosion of petrol He was suffering from burns involving the whole of the right hand and arm, part of the left hand, left arm, face and neck, about half of the back of the chest, and part of the front of the chest and dorsum of the penis It was estimated that 22% of the surface area of the body was burned The burns appeared to be cutaneous only, and were called second degree There was no œdema

On admission the burned areas were covered with dry gauze bandages These were removed by wetting with saline, the burned areas were gently cleaned with soap and water, and the fragments of dead skin were cut away The areas were then covered with a film of sulphanilamide powder from an insufflator, and dressed with tulle-gras, moist saline gauze and cotton-wool This was repeated on the day after admission and again on the second day Blood chemistry, hæmatology, clinical course and treatment are outlined in the table Throughout this period there was no disturbance of the fluid balance, and although the blood free sulphanilamide rose to 59 mg per 100 c cm the blood-urea remained at 31 mg per 100 c cm throughout The clinical signs of toxicity were cyanosis and drowsiness with mental confusion The patient recovered completely

TABLE SHOWING BLOOD CHEMISTRY, HÆMATOLOGY, CLINICAL COURSE AND TREATMENT

Date in July	Hb %*	Red cells (millions per c mm)	White cells (per c mm)	Plasma proteins %	Plasma chloride	Blood urea	Blood sulphanilamide (free)	Clinical state and treatment
					(mg per 100 c cm)			
7th	100	4 8	14,000	5 5	590	35		Admission Dressed with sulphanilamide at 11 PM and again at 11 AM on July 8
9th (11 AM) (5 PM)	107	5 5	19,600	4 5	610	31	29 59	Cyanosed , dressed with sulphanilamide Cyanosed , drowsy , confused , BP 130/90 , resp 28 At 5 15 PM 1000 c cm 5% glucose in normal saline given intravenously , oxygen by nasal catheter
10th	86	5 4	22,800	5 5	610	31	30	Cyanosed , drowsy , rational
11th	92	4·7	27,500			31	24	Slightly cyanosed oxygen discontinued 24 hour specimen of urine volume 1150 c cm containing 14 g free sulphanilamide , deposit of crystals of acetyl sulphanilamide only , no albumen
13th	89		22,300	5 0	575		15 5	Seemed well
14th							Less than 1	Recovered

* Sahli s (acid hæmatin) method , 14 5 g per 100 c cm taken as 100

PERFORATED PEPTIC ULCER
IN WAR-TIME

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IN the Royal Victoria Infirmary there were 200 ulcer perforations in 1939, 222 in 1940, and 251 in 1941. This rise coincided with a small fall in the total number of surgical admissions. Figures for 1926, the year of the general strike showed no comparable rise. During periods in which air-raids were frequent in London, Bristol and Liverpool an increase occurred by a third to six times the usual number of cases,[1] whereas during months without air-raids the figures were normal. Air raids had a less obvious effect in Newcastle than in these other cities, probably because the bombing was less severe. The average number of perforations during months in which raids took place was 19, compared with a monthly average throughout the whole of 7 years of 17. The number of perforations in January was always consistently high, the average being 26. The totals for the Royal Infirmary were as follows:

Year	*Perforations*	*Total surgical admissions*	*Average age*
1926	186	7192	40
1931	156	6931	42
1937	181	6862	42
1938	198	6909	44.1
1939	200	6785	41.4
1940	222	6418	42.5
1941	251	6181	42.2

The cause of this progressive increase is not easy to determine. There has been a change in the last 40 years, both in the site of the lesion and in the type of patient whose ulcer perforates.[2] In 1900 young women frequently suffered from perforations on the lesser curvature, whereas during the last 20 years perforation of ulcers in the pyloric region in men aged about 40 years has been common and young women have rarely been affected. In the Newcastle series the average age was 42 years. This suggests that the increase is not due to those factors which caused perforations in young women 40 years ago.

Other factors which aggravate ulcers are worry, bad dietary habits and overwork. Real anxieties, not trivial cares, aggravate the symptoms and some grave domestic crisis often precedes perforation.[3] The young are more liable to be disturbed by uncertainties of employment than the middle-aged, who are chiefly concerned with social position and financial security. Uncertainty of employment is increased during war-time.[4]

Four cases of adult scurvy were present in Newcastle wards in July, 1942. Since perforations increased tenfold during famine in Russia[5] this may mean that malnutrition is also a factor in the present increase. The conditions under which food is served and eaten are more important than its nutritive value. Long hours of work with hasty sandwich meals, at irregular intervals, were the cause of much gastric disorder in London Transport workers, as shown by the Royal Commission's report on the causes of the 1937 strike.[6]

Despite statements that the health of the nation is better than it has ever been before, there is evidence that digestive disorders and perforation of peptic ulcers have become more common. Perhaps shorter hours of work and improved canteen facilities would result in less time being lost on this account.

I wish to thank the hospital registrar for the figures, and Dr. C. J. Polson for his help.

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[1] Stewart, D. N. and Winser, D. M. de R. *Lancet*, 1942, i, 259. Rendle Short, J. *Ibid*, p. 429. Wilson, A. K. *Ibid*, p. 335.
[2] Jennings, D. *Ibid*, 1940, i, 395 and 444.
[3] Davies, D. T. and Wilson, A. T. M. *Ibid*, 1939, ii, 723.
[4] Davies, D. T. and Wilson, A. T. M. *Ibid*, 1937, ii, 1353.
[5] Hamperl, H. *Ergebn. allg. Path. path. Anat.* 1932, 26, 353.
[6] Health of London Central Busmen, London, 1939.

Reviews of Books

Gray's Anatomy

(28th ed.) Editors: T. B. JOHNSTON, M.D., JAMES WHILLIS, M.D., M.S. Durh., F.R.C.S. London: Longmans Green and Co. Pp. 1558. 60s.

BY all the rules the review of a textbook that has reached its 28th edition should be confined to a short notice of the added merits displayed in its latest appearance. But Gray, long accepted as a—or even *the*—standard textbook of British anatomy, must be regarded as something more than the product of a particular editor and the enterprise of a publisher. When Gray started its career it was distinguished by a series of beautifully clear, accurate and original anatomical drawings. It largely avoided the snare into which so many British textbooks fell of incorporating illustrations of varying degrees of accuracy, in all sorts of styles, culled from any available source. For many years this tradition has been lost, which might be all to the good were accuracy and clarity gained; but one has only to compare the more recent figure 1120 placed in fatal juxtaposition with the older and more accurate figure 1119 (or even with the far older figure 491 of the 12th edition) to appreciate that the attractive colour of the artistic wash drawing cannot condone the placing of the parotid duct on the immediate zygomatic origin of the masseter, nor of the angle of the mandible in the place depicted. When the student wishes to apply the knowledge derived from figure 1120 to the study of the surgical anatomy of the part—as depicted in figures 1280 and 1282—he will encounter confusion. Again, colour cannot be said to be attractive in such figures as 565 (repeated as 630) and 568, nor helpful when overlap or incorrect distribution leads to confusion as in figures 503, 520 and 587. In 557 the synovial membrane is said to be indicated by colour but as a matter of fact, while two bursæ unconnected with the joint are thus distinguished, the synovial membrane of the joint itself remains in part colourless. A figure depicting the disposition of anatomical structures should correctly represent the condition seen in an actual dissection; many of the illustrations recently added to this (and other) British textbooks show little evidence of having been drawn from the actual part. A diagram, on the other hand, represents in simple form a condition assumed to exist, and its value depends on the validity of that assumption. Fig. 1108 still shows the testis descending to the scrotum beneath a peritoneal covering; fig. 604 (unfortunately repeated as fig. 608) represents a state of affairs that has long been known to have no real existence. These should have been deleted long ago, especially since in some cases the text shows more enlightenment, so that a real confusion is created for the student. Thus the development of the upper lip is described more or less in conformity with what is known of its human method of formation; this teaching is illustrated by the obsolete diagrammatic fig. 122, depicting a state of affairs altogether at variance with the description.

Revision of the section dealing with the action of muscles has led to some lack of coordination between the description of joint movements and of the actions of individual muscles. The medial rotating action of the iliopsoas is mentioned on p. 624 but on p. 491, where medial rotation of the hip is dealt with, this muscle is omitted. On p. 604 the brachioradialis is rightly said to act simply as a flexor of the elbow-joint, but on p. 470 pronation and supination are added to its rôle; such instances could be multiplied. But it is a little depressing to find the two sections unanimous in asserting that the extensor communis digitorum acts solely on the metacarpophalangeal joints and has no action on the proximal interphalangeal joints.

Anatomical nomenclature has provided the usual crop of ambiguities. In figure 1142 the veins on the underside of the tongue, which we used to know as the ranine veins, are indicated as "venæ com. n. hypoglossi." In the text two lines above this figure, they are alluded to as the lingual veins: the student takes his choice. It is to be hoped that his examiner does not elect to call them "venæ sublinguales." Perhaps the height of confusion is attained when such terms as "deep transverse muscle of the perineum;" "constrictor urethræ," "compressor urethræ," "external sphincter," "sphincter urethræ" and "urogenital diaphragm" are bandied about The confusion will hardly be dispelled by reference to figs 604 or 608, nor will the text help Of the "sphincter vesicæ," the student learns "its main function is to prevent the regurgitation of semen into the bladder during ejaculation" He may wonder what it is doing in between times, and why it is so well developed in the female but as no mention is made of its existence in the female he will perhaps assume its absence The writer of this section is evidently perplexed because the sphincter vesicæ is "an involuntary muscle," while "the external sphincter or sphincter urethræ is under voluntary control after early infancy"

It would be of little avail to attempt to list even a representative series of errors of omission or commission The hiatus muscularis of the appendix still receives no mention though it was described and figured by a British anatomist more than forty years ago and has long since taken its place in international literature The prostate is still described as "surrounding" the urethra and in every figure, whether frankly diagrammatic or supposedly drawn from the actual part, the anterior aspect of the urethra is depicted as a generous bulge composed entirely of prostatic tissue (figs 605, 1225, 1227, 1300) The student is still instructed that the prostate is "about the size of a chestnut" and that the bulbo-urethral gland "is about the size of a pea" One distinguished anatomist, who objected to the expression "as large as a pea," had no objection to the description "twice the size of a split pea," because he maintained that split peas were more uniform in size than whole peas, but it is high time these things passed from scientific literature The system of giving references to published work in footnotes, instead of providing a proper bibliography, has ever been a tiresome vice of British textbooks The vice is accentuated when the reference is as trivial as are many of those provided in this book

Presumably whatever the content of the curriculum provided for the medical student, there should be a recognised and authoritative British manual of anatomy which presents, in the clearest possible manner, the essential facts of the subject necessary for his guidance in his professional course, and in addition, and for reference only, a real textbook of the subject at least as good as the best produced on the continent of Europe. We have at present no such book and there seems to be little likelihood that the present system of pouring new wine of doubtful virtue into old bottles of undoubted frailty is capable of producing one

Expectant Motherhood

Nicholson J Eastman, MD, professor of obstetrics in Johns Hopkins University London John Murray Pp 174 6s

Pregnancy, says Professor Eastman in his foreword, should be a healthy, happy time, for no other event confers so much in deep-seated, abiding contentment Even that old bogy, the confinement, has at last been laid low and labour may be faced with equanimity and even nonchalance since, as he informs the mother to be (with a command of language that Mr Beverley Nichols might well envy), the doctor "will send you off with a magic pill to some distant country of dreams" The radiant little lady, drawn from the best stratum of New York society, to whom presumably this handy little book is addressed, has much to learn from it She may carry on with her social life, indeed it is brave and wise to do so, labours which start at the bridge table are often the easiest in the long run, smoking, provided a modest ten cigarettes per day is not exceeded, can do little harm, neither can a glass of wine or the occasional cocktail "Friends, movies, novels and even the comic strips are more wholesome diversions than thinking about pregnancy" There is a lot of information about fertilisation and some rather disturbing pictures of the female genital organs and the fœtus in various stages of its development, but the chapters on diet, hygiene of pregnancy and important danger signals embody much useful and sensible information Every page has a little tip—e g, "If your waters should break when you are downtown it is judicious to get a taxi and go direct to the hospital Your husband can bring your grip later."

British Rebels and Reformers

Harry Roberts London William Collins Pp 48 4s 6d

Dr Roberts is of course at home among the rebels—with Lord Shaftesbury, Thomas More, John Wycliffe, Hugh Latimer, John Ball, Robert Owen, William Lovett, Bernard Shaw and bold William Cobbett and all We have had in our day some formidable champions of the rights of the ordinary man, and in reading this book it is strange to find how often they fought not for new reforms but to get old rights back—"to recover" as Thomas Attwood put it in 1830 (after a good dinner) "the ancient liberties of our country" It seems as though freedom is something which can only be kept by constant vigilance—as though man must always watch for the inroads which self-interest, that natural component of his nature, can make into the interests of the whole group Against this force, as Dr Roberts shows, has been set again and again the resistance of those who "are moved to protest against injustice and tyranny of which they themselves are not victims" These rebels look out at us from cleverly chosen pictures (the palm goes to the one of Sydney and Beatrice Webb) And from John Ball leading the peasants' revolt to Elizabeth Fry cleansing the prisons they were moved by this honest indignation In his last two paragraphs Dr Roberts begins another and much longer book, for he turns to the future and remarks provocatively "A democratic industrial system in which the majority of the people are little interested is not worth contemplating" Much of our welfare he thinks will depend, as it has done in the past, on the leaders we choose, and our choice will depend on our capacity to recognise talent and character and use them for the common good Production of luxuries can have little ultimate value "if accompanied by inefficient and vulgar consumption In a true scale of values liberty, security and reasonable leisure stand far higher than mere luxury" Here then, he considers, is good reason for revising our system of education so as to achieve the highest attainable common standard without lessening scope for the exercise of individual talent A difficult programme, but one worth achieving May we hope he will expand this thesis in another book?

Modern Treatment Year Book, 1942

Editor Cecil P G Wakeley, CB, FRCS London Medical Press and Circular Pp 300 12s 6d

This volume, the eighth of its series, like its predecessors is made up of articles selected for republishing because they are important to the general practitioner Though described as a book of treatment, it gives as much space to diagnosis as to therapeutics, sometimes more Practitioners will find it the more useful on this account and will appreciate the essentially practical attitude of most contributors There is some unevenness, the paper on obesity, for example, is divorced from war-time dietetics When advising diet in cases of high blood-pressure it scarcely seems necessary to advise inclusion of principles "known as vitamins" In contrast, clear instructions and guidance are given in Manson-Bahr's treatment of dysentery, E Fletcher's account of arthritis, and Macnab's description of transfusion in war injuries About 20 articles are devoted to general medicine, 14 to special aspects of war medicine or surgery, 11 to general and orthopædic surgery Some of the operative details given by Maingot on the surgical treatment of irremovable duodenal ulcer seem slightly out of place in a volume for general practitioners As a useful refresher course in recent methods this volume will be welcome

Black's Medical Dictionary

(17th ed) J D Comrie, MD Edin, FRCPE London Adam and Charles Black Pp 1006 21s

A dictionary which has had seventeen editions in 36 years needs no introduction, and it only remains to note briefly the newer features A section on air-raid casualties is quite properly dogmatic, and there is a short but comprehensive account of the various sulphonamides The section on anæsthetics, however, hardly gives an adequate account of present methods and apparatus There are some brief references to a few forms of industrial disability, but industrial disease is not dealt with as a whole Yet the positive merits of "Black" are so outstanding that such omissions may well be forgiven

THE LANCET

LONDON SATURDAY, OCTOBER 24, 1942

NEONATAL MORTALITY IN THE USA

In the United States D A D'Esopo and A A Marchetti[1] have set out to obtain accurate information about the causes of 1000 fœtal and neonatal deaths over a period of six years at the New York Lying-in Hospital and the Sloane Hospital for Women Their investigation is particularly valuable because an autopsy was obtained in 893 cases They frankly face the multiplicity of factors involved in a single case, and carefully review all clinical and pathological data before determining the primary cause of death The gross fœtal and neonatal mortality-rate represented by the 1000 cases was 3 87%, and if previable prematures are excluded the rate becomes 3 52 The first five causes of death listed are asphyxia (198 deaths), prematurity (as a primary cause, 185), congenital abnormalities (141) maceration, cause unknown (130), birth injury (115) In 30 cases no cause of death could be found, and some items make surprising reading, such as 28 instances of erythroblastosis and 21 of hæmorrhagic disease of the newborn The causes of asphyxia are analysed in detail, particularly from the point of view of prevention These two obstetricians believe that the preventive treatment of this condition should begin in utero with a more judicious use of oxygen and ether anæsthesia in cases in which the fœtus begins to show early signs of distress They especially condemn "hurry" in such circumstances with operative interference Premature separation of the placenta and prolapse of the cord as causes of asphyxia appear frequently in their analysis and they urge that better obstetrics might do much to help with these problems, mentioning the dangers of pituitary extract in this connexion In a study of the relation of inhalation analgesia to asphyxia neonatorum C J Lund[2] of Wisconsin has analysed complete records of 1982 deliveries, and has based his conclusions on a careful classification of all infants alive at the onset of labour under the heading "no asphyxia," "mild asphyxia," "moderate asphyxia" and "severe asphyxia," the last group containing the fatalities The results show that when properly administered with due regard for the prevention of anoxæmia the three anæsthetic agents chiefly used in this study—nitrous oxide, ethylene and cyclopropane—do not materially influence the incidence of asphyxia so long as they are used only as analgesics But when they are pushed for the production of anæsthesia there is an increased risk of asphyxia, particularly when the period of administration of cyclopropane is increased More important than the inhalation agents or method actually used were complicating factors such as prematurity and complications of pregnancy and labour It is the summation of effects of which anæsthesia may be the last straw which results in asphyxia, and it is therefore rash to speak of a completely safe obstetric analgesic

Second on the list in the New York series came prematurity, and a recent report from Ann Arbor, Michigan, shows once again what can be done by organised team-work in the infant nursery to improve the survival-rate of immature infants A C Barnes and J R Willson[3] report a fall in mortality for the periods 1932–36 and 1937–41 from 32 5 to 9 5% The chief factors in this success appear to have been better and more nursing care, more and better incubators and a freer use of oxygen

The report brings out the importance of careful temperature recording and of maintaining the humidity of the air breathed by the infant at 50 to 60% Careful protection from infection is fundamental and so is the use of breast milk for feeding; at Ann Arbor they use dilute unsweetened condensed milk as an alternative The New York workers also emphasise the value of adequate pædiatric organisation for the saving of premature babies, particularly during the first twenty-four hours of life. The Michigan programme includes vitamin K in the first 2 or 3 days to prevent a prothrombin drop, and a study in Chicago illustrates yet again the multiplicity of factors in neonatal troubles, for J E Fitzgerald and A Webster[4] show that the administration of certain barbiturates (sodium pentobarbital or sodium amyl bromoallyl barbiturate) as analgesics depresses the blood prothrombin levels in mother and child When these drugs are used it seems specially desirable to give vitamin K to the mother during labour It does not follow that barbiturates are a direct factor in promoting neonatal hæmorrhage but they may play some part

PETHIDINE

Relief of pain is the goal of much of the physicians' striving and in his search for the ideal analgesic he has an enthusiastic ally in the organic chemist Rothschild[5] of Basle surveys some of the many newer pain-relievers and their chemical relationship with older remedies whose virtues and faults we know Among the fairly recent recruits is the carboxylic acid ethyl ester of 1-methyl-4-phenylpiperidine, officially named pethidine by the GMC a year ago and known on the continent as 'Dolantin' and in the United States as 'Demerol' Its structural formula invites comparison with the tropic acid series of antispasmodics Furthermore according to Schaumann[6] morphine should be considered a derivative of 4-phenylpiperidine rather than a phenanthrene The new drug therefore has reputable chemical kinsfolk Pethidine base is only very slightly soluble in water but the hydrochloride readily dissolves to produce a neutral solution

It would be a first-rate therapeutic event if it could be shown that while possessing at least some of the virtues the new arrival has none of the faults of its more famous relation The relief of pain by drugs is achieved in one of three ways the spasm of smooth muscle may be relaxed, the pain threshold may be raised, or the patient's attitude towards pain may be modified Experimentally pethidine has been found to act in the first two ways[7] It is a depressant to all forms of muscular tissue In its antagonism to the usual parasympathomimetic drugs it is weaker than atropine but it is more powerful than papaverine in counteracting the action of histamine on the intestine It has little effect on the pulse-rate or the pupil Pethidine therefore possesses properties which render it worthy of therapeutic consideration as an antispasmodic drug Secondly, and of still greater clinical value, it possesses a powerful analgesic action associated with stimulation rather than depression of the central nervous system Further it is said to be relatively non-toxic, lowering the blood-pressure and depressing the respiration only with large doses Unfortunately there is a wide gap between the pharmacological laboratory and the patient's bedside, and we are still in need of carefully controlled clinical investigation With analgesics more than any other type of remedy is it essential to beware of the vague impressions which often lead to a belief in non-existent virtues The few reports that are available are certainly encouraging for many types of visceral muscle-spasm, particularly renal and biliary colic and postoperative pain Pethidine has apparently been used with success in obstetrical practice, to alleviate pains when labour is of long duration and especially when delay is due to rigidity of the cervix[8], neither mother nor child was adversely affected It has relieved pain after injury or operation[9] and there are records of its value in the treatment of the severer types of neuralgia and such conditions as the tabetic crisis It is clearly worth a careful trial when relief of pain is desired without narcosis and in this connexion war-time casualties come specially to mind

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[1] *Amer J Obstet Gynec* 1942, 44, 1

[2] *Ibid*, 1942, 43, 365

[3] *J Amer med Ass* 1942 119 545

[4] *Ibid*, p 1082

[5] Rothschild F *Helv med Acta*, 1941, suppl 7, p 83

[6] Schaumann, O *Arch exp Path Pharmak* 1940, 196 109

[7] Duguid A M E and Heathcote, R St A *Quart J Pharm* 1940, 13, 318

The requirements of the ideal analgesic are rapidity and reliability of action, high margin of safety, freedom from objectionable secondary effects and lack of any tendency to habituation Since pethidine is non-irritant it can be administered by any of the parenteral routes as well as by mouth After an intravenous injection the analgesic effect appears within 15 and usually in less than 5 minutes and generally lasts for over 3 hours Undesirable side-effects, such as vasomotor disturbances, nausea and vomiting, have been reported but these were always relatively mild and of short duration HIMMELSBACH[10] observed that, when administration of the drug was continued for ten weeks, muscular tremors and twitches became evident at the end of the first week and persisted until the third day after withdrawal It may be concluded therefore that cumulative action is not well-marked As regards addiction, however, the reports are not so favourable VON BRUCKE[11] and KUCHER[12] suggest that pethidine may be habit-forming and the latter noted withdrawal symptoms HIMMELSBACH[10] has found that in morphine addicts pethidine partially satisfied the physical dependence established to morphine and that in subjects previously addicted to morphine physical dependence to pethidine resulted when this drug was given continuously for ten weeks Although the abstinence syndrome was milder after pethidine than after morphine there seems little doubt that pethidine carries the risk of addiction In Germany, indeed, steps have already been taken to prevent the indiscriminate use of this and similar preparations[13]

NATURAL HISTORY OF PARATYPHOID B

ALTHOUGH it is an enteric fever, paratyphoid B differs materially from the chief member of the group, and in a study of 40 outbreaks of the disease in Great Britain SAVAGE[1] points out how nearly the infecting organism behaves like a salmonella The association is close not only bacteriologically but also epidemiologically, and to a certain extent clinically The summer prevalence of the outbreaks —60% in May–July—approaches more closely to the seasonal distribution of salmonella food-poisoning than to the autumnal incidence of typhoid fever Paratyphoid and food-poisoning are conveyed in the same way by infected food In contrast with typhoid, water-borne outbreaks of paratyphoid fever are rare In the outbreak at Brixworth[2] the special feature was a heavy contamination of a very small water-supply Yet paratyphoid bacilli are readily recoverable from sewage and sewage effluents Experimentally WILSON and BLAIR[3] found the organism to be viable up to 21 days, the corresponding figure for typhoid bacilli being 38 days In 16 of the 40 outbreaks analysed by SAVAGE the vehicle of infection was cream He maintains that the number of organisms which must be ingested to initiate the disease is considerable, so that the organism must be able to multiply before it can infect Artificial cream, containing flour, vegetable oil, lecithin, powdered egg, sugar and water, is a particularly suitable medium in which multiplication can occur Synthetic cream is more likely to be infected in the bakery than in the factory, for the large-scale manufacture of cream involves less handling than the making of cream cakes and pastries[4] Next in importance to cream were milk (8 outbreaks) and ice-cream (2 outbreaks) Bread, cream cheese, tongue, trifle and water-cress were each responsible for an outbreak In this connexion it should be realised that food-borne infections do not necessarily cause explosive outbreaks

The incidence of paratyphoid B fever among the population at risk is low and intermittent, but a much greater number are infected than fall ill with the disease If these are taken into consideration the spread is found to be much more constant and extensive At Brixworth, for example, 34 people were at risk but only 4 contracted the disease, yet 21 others were infected, some of whom could be classed as mild ambulatory cases These, if missed —as they may readily be—are indubitably a potent source of infection While admitting the occurrence of chronic carriers, SAVAGE regards them as much less important epidemiologically than mild missed cases The case-fatality in these outbreaks was 1 76%, compared with 1 5% for acute food-poisoning due to living salmonella strains It is well recognised that paratyphoid fever, particularly in children, may produce the gastro-intestinal symptoms—diarrhœa, vomiting and acute abdominal pains—characteristic of acute food-poisoning These may be the only symptoms but more commonly they are followed, either immediately or after an interval, by typical enteric symptoms In the Consett outbreak described by WARREN[5] 76% of the cases started with gastro-intestinal symptoms and in a fifth of these they were the only symptoms. Such figures are exceptional but they add point to SAVAGE's views.

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[8] Benthin, W *Dtsch med Wschr* 1940, 66, 760
[9] Rosenthal, H *Münch med Wschr* 1939, 86, 1079
[10] Himmelsbach, C K *J Pharmacol* 1942, 75, 64
[11] von Brücke, S *Wien klin Wschr* 1940, 53, 854
[12] Kucher, I *Klin Wschr* 1940, 19, 688
[13] *Ibid*, p 752

[1] Savage, W G *J Hyg Camb* 1942, 42, 393
[2] *Mon Bull emer publ Hlth Lab Ser* February, 1942, p 1
Jones, D J *et al* *Lancet*, 1942 ii, 362
[3] Wilson, W J and Blair, E M M *J Hyg Camb* 1931, 31, 138
[4] See *Lancet*, 1942, i, 173

Many of the older writings on the disease are invalidated by their failure to distinguish between *Bacterium paratyphosum B* and other salmonellas, particularly *Bact typhi murium* (*B aertrycke*). SAVAGE, emphasising the relationship, postulates a recent common origin for these organisms. In its evolution the paratyphoid bacillus has acquired some of the invasiveness of the typhoid bacillus while retaining some of the intestinal irritant properties of the salmonellæ. This point is further elaborated in SAVAGE's discussion of the variable incubation period of the disease. During incubation the organisms multiply in the mesenteric lymph-nodes, the liver and the spleen. With the onset of the disease a bacteræmia occurs. Positive blood-cultures can be obtained in 90% of cases in the first week, 75% in the second week and 60% in the third week. The recovery of the organism from the stools in greatest numbers during the second week is not due to their multiplication in the bowel but to their being excreted partly in the bile. On the other hand, food-poisoning is a purely enteral infection and invasion of the blood, except as a terminal event, is rare. SAVAGE finds here an explanation of the relatively long incubation period of the enteric fevers and contrasts it with the short period for food-poisoning and for the gastro-intestinal symptoms of paratyphoid fever. This speculation is worthy of further investigation: if there is any substance in it, cases of paratyphoid fever without enteric symptoms should have no bacteræmia. KAUFFMANN[6] regards the enteric and gastro-intestinal forms of the disease as due to different strains of the organism. The classical bacillus does not ferment *d*-tartrate and produces a mucous wall around agar colonies, whereas strains causing gastro-enteritis ferment *d*-tartrate and do not produce the mucous wall. This appears to be a fundamentally different view from that of SAVAGE who regards the classical paratyphoid bacillus as a recent variant from other salmonellæ. Except for its occasional invasion of dogs it has become almost an obligatory human parasite, albeit one which does not readily infect man. So impressed is SAVAGE with the view that *Bact paratyphosum B* is a true salmonella that he attributes its epidemiological behaviour to this relationship.

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[5] Warren, S H *Publ Hlth* 1941 54 139

[6] Kauffmann F Die Bakteriologie der Salmonella Gruppe Copenhagen 1941

Annotations

COMFREY, MAGGOTS AND UREA

IN 1912 Dr C J Macalister, stimulated by the story[1] of the disappearance of a nasal sarcoma under poultices of comfrey root, set out to investigate the properties of the common comfrey of our ditches and dunghills. This comely but bristly herb, rightly eschewed by cattle, had been held in high esteem in rural England since Saxon times as a specific for wound healing.[2] Macalister[3] had extracts of the root analysed by Mr A W Titherley, D Sc, who found that they contained a relatively high proportion of allantoin. He used both crude extracts of the root and solutions of pure allantoin to treat a series of chronic ulcers that had failed to respond to other forms of therapy, and was convinced of their efficacy. He was cautious in drawing conclusions, too. "One is rather apt," he says, "when experimenting with a substance in this way, to allow optimism to exaggerate the resultant benefits, and it is an advantage to get others to form an independent judgment concerning them from their own observations"[4]—words which might be taken to heart at the present day. Nevertheless he was convinced that he had found a cell proliferant, if only for the reason that gr 6 of allantoin taken in divided doses over a period of six hours would run his own white cells from 6000 up to 15,000 or more per c mm. William Bramwell,[5] also of Liverpool, suggested that comfrey dressings succeeded because they set hard and adhered closely to the skin. Allantoin had been known since 1821, when it was found, not in sausages as the classically minded might imagine, but in the allantoic fluid of cows. It occurs in many plants and is a normal constituent of the urine of all mammals, where it is an end-product of purine metabolism. Man and the Dalmatian coach-hound share the distinction of having none in the urine except what they have eaten ready made. It is glyoxyldiureide, $C_4H_6O_3N_4$. Allantoin appeared again in surgical writings after it had been shown to be present in the excretions of maggots,[6] for military surgeons have acknowledged the benefits of maggot infestation in severe wounds for as far back as records extend. Further examination of the action of allantoin suggested that its action in accelerating wound healing arose from its ability to break down and form urea.[7] Urea had earlier been shown to assist the healing of infected wounds and ulcers, though how it does so remains doubtful. W Ramsden demonstrated in 1902 that proteins dissolve in strong solutions of urea, and that weaker solutions hasten the action of proteolytic enzymes; the clue may lie there. More recent studies of the action of allantoin on healing processes have not been encouraging; Chu,[8] in fact, found that far from accelerating the growth of epithelial cells solutions of allantoin retarded their multiplication in vitro, and the Council on Pharmacy and Chemistry in the USA thought there was insufficient evidence in 1938 to accept commercial preparations of allantoin as healing agents. Lately allantoin has been mixed with sulphanilamide for application to raw surfaces, but the efficacy of this traditional remedy has yet to be placed on a firm basis.

PROGNOSIS AFTER PERFORATION

THERE is a widespread impression that if a patient recovers after operation for a perforated peptic ulcer he has a good prospect of a lasting cure of the ulcer. Writing in 1918, D C Balfour of the Mayo Clinic referred to the "clinical fact . . . now generally recognised that perforation of a gastric ulcer is quite likely to be followed not only by the cure of the ulcer but by the cure of the patient." This optimistic view moreover is based on the assumption that nothing more than simple closure of the perforation has been done. No explanation seems to have been offered, but it might be supposed that a patient who has once perforated will thereafter be more likely to remember his physician's advice and take care with his diet and ways of life. In this way an acute catastrophe in an ulcer may prove a lasting blessing, but its moral effect will be lost if the popular error is allowed to persist that once an ulcer has perforated there will be no more trouble. For this reason, if for no other, careful studies of the after history of perforation cases are useful Lately Harrison and Cooper[1] have analysed 57 cases Of these, 16 died in hospital, the fatality rising from 13% in those operated on within ten hours of perforation to 46% in those in whom operation was delayed for up to 24 hours Of the 41 patients who left hospital all were followed up after periods ranging from one to twelve years, and it was found that only 7 (17%) had remained free from symptoms Of the remainder, 2 had died and most of the other 32 had had only a short period, averaging 1 8 years, free from symptoms after leaving hospital, the one who had the longest asymptomatic period had this abruptly terminated by a second perforation Very few of the patients had strictly followed any course of medical treatment after their operation These figures, besides exploding a dangerous misapprehension, serve to emphasise the fact that the treatment of chronic peptic ulcer can never be surgical alone, and that to extract any good from the evil of perforation requires not only early diagnosis and skilled surgery but a warning to the patient that this disaster is but an incident in a condition which requires care throughout life, suture after perforation is not a final cure for a "simple ulcer," but the saving of a life from an acute complication in a chronic constitutional condition

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[1] Thomson W *Lancet* 1896 ii 1507

[2] The Latin name of the genus *Symphytum* bears testimony to this reputation

[3] An Ancient Remedy and its Modern Utilities, London, 1936

[4] *Brit med J* 1912, i, 10

[5] *Ibid*, p 12

[6] Robinson W J *Bone Jt Surg* 1935 17 267

[7] Robinson W *Amer J Surg* 1936 33 192

[8] Chu, H J *Proc Soc exp Biol N Y*, 1938, 38, 99

EPIDIDYMITIS

GONORRHŒA is the commonest cause of acute epididymitis and the chronic form is most often tuberculous Occasionally, however, tuberculous involvement of the epididymis may manifest itself in an acute form and cause confusion in diagnosis The differential points of value are summarised in the *Army Medical Directorate Bulletin* for July (p 6) In tuberculous cases the onset is more gradual and pain and tenderness are less severe, the epididymis and vas may present nodules which become adherent to the scrotum and later break down to form sinuses In addition, there may be evidence of involvement of other parts of the genito-urinary tract and it may be possible to demonstrate tubercle bacilli in the urine In gonococcal cases the epididymis is smooth, very tender and uniformly enlarged, the vas is not nodular and the scrotum is not adherent Although urethral discharge usually abates abruptly with the onset of the epididymitis, the urine often still contains shreds The response to adequate chemotherapy is another point of value—gonococcal epididymitis rapidly subsides while tuberculous cases fail to respond Since both types of case may be sent to the VD wards in the first place, the venereologist must keep the possibility of tuberculous epididymitis in mind if he is to avoid delay in starting appropriate treatment

PULMONARY EMBOLISM BY AMNIOTIC FLUID

IN the past few years much attention has been paid to fat-embolism as a cause of shock symptoms in patients with fractures and severe trauma, such as are caused by motor accidents and air-raids An analogous condition has been shown by Steiner and Lushbaugh[2] to play an important part in the pathology of "obstetric shock" In 9 patients who died during labour or within eight hours after delivery they found multiple embolism of the small branches of the pulmonary arteries The material forming the emboli appeared to be particles of fœtal products which had been floating in the amniotic fluid during the labour Mucus from meconium, and squames, vernix caseosa and lanugo from the fœtal skin, were all recognised as constituents of the emboli In addition there was often heavy infiltration of the emboli with leucocytes, even within an hour of the first onset of symptoms The mucinous emboli were long and were usually impacted in arteries about 1 mm in diameter, the embolism by squames and vernix was usually in small arterioles and capillaries The manner in which the liquor amnii gains access to the uterine veins is not clear In one of the cases there was rupture of the uterus, and in another case cæsarean section had been performed through the placental site In the remaining cases the uterus was intact, it is presumed that a tear had occurred through the membranes and into the uterine veins, but such a tear has not actually been demonstrated Clinically the usual course in these patients had been as follows The patient was a rather old multipara with a large fœtus past term, possibly dead in utero, and with meconium in the amniotic fluid The labour pains were strong and sometimes tetanic During labour or very soon after delivery there was a sudden onset of shock with chill and restlessness, dyspnœa and cyanosis, and sometimes vomiting The syndrome presented similarities with an anaphylactic reaction to foreign protein Sometimes there was œdema of the lungs, and sometimes there was some post-partum atony of the uterus with moderate hæmorrhage Death usually occurred in from 1 to 11 hours after the first onset of these shock symptoms These 9 cases are all fatal ones, *for at present direct evidence on the matter can only be* obtained at autopsy Nevertheless it seems probable that some non fatal cases of obstetric shock are due to this cause Steiner and Lushbaugh examined the lungs of 34 women who died of other conditions during late pregnancy or the puerperium, these controls were all negative Subsequently, however, they examined the lungs of a woman who had rupture of the uterus and severe shock at the time of delivery but survived until the seventh day of the puerperium In this case there were pulmonary emboli in a healing stage, the mucinous emboli being infiltrated by macrophages and the emboli of particulate matter showing a well-marked foreign body giant cell reaction Further evidence was obtained by the intravenous injection of human amniotic fluid and meconium into dogs and rabbits The immediate clinical and pathological effects were much the same as in human patients A satisfactory study of the later pathological changes in animals was unfortunately prevented by bacterial contamination of the injected material It is rather astonishing that so striking a lesion as this should have been overlooked by all previous workers on obstetric shock

EYE SIGNS IN SUBARACHNOID HÆMORRHAGE

BEFORE the introduction of lumbar puncture cases of subarachnoid hæmorrhage from an aneurysm of the circle of Willis were classed as "apoplexy" and no further diagnosis was sought Lumbar puncture reveals a blood-stained cerebrospinal fluid in some of these patients, and if this is coupled with a cranial nerve palsy and rigidity of the neck the diagnosis is not often in doubt The ophthalmoscope is a useful accessory to diagnosis, for examination of the retina will show hæmorrhages into the eye in most cases Post mortem examination of the orbit often reveals that the optic nerve is surrounded by blood, due, it was supposed, to direct extension from the cranial cavity, the blood having passed through the optic foramen and down the prolongation of the cranial membranes which surrounds the optic nerve It was also thought that the blood inside the eye came there by direct extension from the subarachnoid cul de sac behind the globe Riddoch and Goulden,[1] however, after a critical examination of five patients suffering from this disease, concluded that while the blood could track through the optic foramen and down the sheath of the nerve it could not pass from the sheath of the nerve into the eye, and that where intraocular hæmorrhage occurred, it did so by the same mechanism as operates in papillœdema—the central retinal vein is compressed as it passes through the subarachnoid space some 10–12 mm behind the eye, and by this means venous stasis inside the eye is produced There seems much to support this argument for it is clear that peripheral retinal hæmorrhages—which sometimes occur—could not come from direct extension from the nerve sheath Ballantyne,[2] in five fatal cases of subarachnoid hæmorrhage, found that there were often scattered hæmorrhages throughout the orbit, in the fat and around the ciliary ganglion They seemed to have no connexion with the subarachnoid hæmorrhage and Ballantyne submits that the old story of direct extension from the cranium will not do He concludes that the changes he found in the orbit can only be accounted for by some mechanism which produces venous stasis in the whole orbit, and suggests that we have such a mechanism in the sudden and forcible increase in intracranial pressure produced by the hæmorrhage, which in turn causes pressure on the venous sinuses inside the cranium One would have thought, however, that the extensive alternative venous drainage of the orbit by way of the facial and deep facial veins would have prevented venous stasis in the orbit Dupuy-Dutemps[3] quotes some experiments by Sicard in which grains of chinese ink injected into the subarachnoid space of living animals found their way through the dural sheath and into the cellular tissues This seems to offer an alternative explanation to the findings in the orbit in these patients

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[1] Harrison, C and Cooper, F W *Ann Surg* 1942 116, 194

[2] Steiner, P E and Lushbaugh C C *J Amer med Ass* 1941, 117, 1245 and 1340, *Amer J Obstet Gynec* 1942, 43, 833

[1] Riddoch, G and Goulden, C *Brit J Ophthal* 1925, 9, 209

GLYCOLS IN AIR-DISINFECTION

THE bactericidal action of both mists and vapours has been investigated in relation to the control of cross-infection in respiratory diseases, and it is generally agreed that vapours are effective provided they are sufficiently concentrated But since Bechhold[4] asserted that weight for weight phenolic bactericides were much more efficacious as mists than as vapours attention has been mainly turned to the production of stable and durable mists Robertson and his colleagues[5] of Chicago have found that propylene glycol, much used by previous workers as a solvent for germicides, is itself germicidal, and is more effective as a vapour than when an equal quantity is dispersed in droplets 1μ to 2μ in diameter as an aerosol At a temperature of 20° C, they say, 1 g per 1 4 cubic metres of air saturates the atmosphere, though less than half this amount, evaporated from Petri dishes overnight, killed the various organisms tested almost at once They demonstrated a very high lethal effect of the glycol when it was dispersed as an aerosol in a concentration of 1 g per 2 cubic metres of air, or when dispersed as a vapour in about a quarter of that concentration Actually vapours are presumably concerned in both cases, for small particles of most of the glycols evaporate completely in a few seconds or even a fraction of a second Some of the other glycols acted as bactericides in the same way Propylene glycol, however, has the advantage of being much better tolerated by animals Cases of glycol poisoning in man, even from inhalation of the vapours, have been reported, but not, apparently, from propylene glycol On the other hand, mice are apparently unaffected by living for weeks in an atmosphere supersaturated with ethylene glycol, although there is a limit, especially in females, to the amount they can take by mouth Stokes and Henle[6] of Philadelphia have found ultraviolet irradiation and vaporisation of propylene glycol highly and about equally effective in preventing air-borne infection of mice with the virus of influenza A The ultraviolet light was projected as a "curtain" in front of each cubicle and also in the upper part of the ward above the cubicles The glycol was vaporised from a hot plate placed in front of an electric fan near one of the ward windows so as to give a concentration of 1 in 2–4 million They also quote an unpublished controlled experiment by T N Harris in which a concentration of one part of propylene glycol vapour in 30–40 million parts of air was strikingly successful in protecting children in a convalescent home from respiratory infection

METABOLISM OF PLASMA PROTEINS

THOUGH easily accessible for study or assay, the plasma proteins have always been rather neglected by physiologists Starling early established that one of their functions was the exertion of colloidal osmotic pressure in the circulating medium This function is now well understood and the part it plays in the formation of lymph and of various types of œdema has been thoroughly explored For many years Whipple[1] and his colleagues have been studying in dogs the formation and the wider functions of the circulating proteins One aspect of this work has been the intermittent removal of large amounts of plasma proteins to discover what type of diet will cause the most complete and rapid resynthesis This approach has led to the conclusion that some dietary proteins are much more efficacious than others and that proteins which favour hæmoglobin formation are not necessarily those which favour plasma protein production, as might be expected, the proteins of serum itself are the most effective that can be taken by mouth These views have not gone unchallenged however, Melnick, Cowgill and Burack[2] found that serum proteins, casein and lactalbumin each give an equally good synthesis of plasma proteins Further experiments in Whipple's laboratory have shown that dogs which have been depleted of plasma proteins for some time are abnormally susceptible to infections of many kinds and to poisoning with chloroform and organic arsenicals The susceptibility can be removed in a day or two by a high protein diet, or immediately if considerable amounts of plasma protein are given intravenously The amino acid methionine has the same effect These observations may have considerable therapeutic significance Some of the experimental results of these workers seem a little revolutionary to the conventional physiologists Thus they have shown that dogs may be maintained in nitrogen equilibrium for weeks solely by the intravenous injection of plasma protein This suggests either that these proteins must be broken down in the liver and their amino acids redistributed to other tissues according to their needs, or that the plasma proteins themselves must enter the cells of the body, there to be transformed into the proteins characteristic of the cell Whipple favours the second hypothesis It would be helpful to see this work confirmed on another species before the results are accepted as applying to man

SPEED AND DELAYED FRACTURE UNION

THE orthopæd has lately been heaping abuse on his own methods of treating the fractured tibia Excessive traction, the pin, the non padded cast, long immobilisation have all been blamed, and it has been urged that it would be better to make certain by earlier and more frequent operation J P Campbell at the Nottingham meeting of the Orthopædic Association says Not at all, lift up your hearts, you are at least as good as your forefathers at the treatment of these fractures The "modern" delayed union of the tibia, he maintains, is due to the increased severity of the injury, in the simple fracture union takes no longer than of old In an analysis of 54 tibial fractures at the junction of middle and lower thirds, he divides the cases into slight—those arising in football, boxing or jumping, and severe—those that followed motor-cycle, gunshot wounds or other explosions The average period of disability for the 10 slight cases was 16 weeks and for the 44 severe cases 28 weeks The period of disability for the slight injury probably compares favourably with that with treatment by the older methods Radiographic evidence was in these cases the indication for removal of the plaster and the start of weight bearing Campbell found that plaster immobilisation itself led to weakness, pain or limitation of movement in joints, which were not previously involved As a rule, the convalescing period was about twice the period in plaster, so that the longer the plaster immobilisation the longer was the subsequent convalescence, and this was despite regular exercises for toes and knee from the outset and the use of a walking foot plate after 4–6 weeks Campbell has therefore started removing the plaster on the first indication of clinical union, which is several weeks before radiographic union The limb is then supported on a plaster back splint, and non-weight-bearing exercises are begun, weight-bearing being started when X rays show union In 25 of the 44 severe cases the injury was due to a motor cycle accident and Campbell recommends a special metal shin guard for the motor cyclist Rowley Bristow in the discussion said the opinions of a large number of dirt-track riders and other motor cyclists have been taken on shin-guards, and the Army has decided that the only effective protection is a guard on the motor-cycle itself Many motor-cycles have already been thus fitted He also stressed the importance of care in handling these fractures, reduction by the onlooker often results in the enclosure of a large mass of dirt between the bone ends

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[2] Ballantyne J *Glasg med J* 1942 20, 1
[3] Thèse de Paris 1900
[4] Bechhold, H 1935 Improvements in rendering micro organisms innocuous British patent No 472 623
[5] Robertson, O H, Bigg E, Puck, T T and Miller B F *J exp Med* 1942 75 593
[6] Stokes J and Henle, W *J Amer med Ass* 1942, 120, 16

[1] Whipple, G H *Amer J med Sci* 1942 203, 477
[2] Melnick D, Cowgill, G R and Burack, E *J exp Med* 1936, 64, 897

LCC AND MEDICAL STUDY

THE LCC are putting some hard thinking into the preparation of their evidence for the Interdepartmental Committee on Medical Schools We have already described their reactions as a local education authority (*Lancet*, Oct 10, p 444), and now they have spoken their mind as the major health authority for London, as the largest civilian employer of medical staff in the country, and as the administrator of hospital and public health services which offer facilities for a complete medical training The council therefore begin by suggesting to the interdepartmental committee that not only should these facilities be used to increase available resources for the teaching of medicine but that an undergraduate medical school should be set up based on one of their larger general hospitals, and making use of special hospital and institutes as required They feel that there is room for more integration in the teaching which now obtains between the voluntary and municipal hospitals if continuity of the curriculum is to be ensured and gaps avoided They suggest that an advisory body, similar to that which now makes appointments to university chairs, should be established for each combination of linked municipal and voluntary hospitals Representatives of both kinds of hospitals and of the university would sit on these bodies Junior clinical appointments would be interchangeable between the linked hospitals and if it is decided that a medical student must after qualification and before registration hold a house-appointment the council will adjust its staffing arrangements After the war they would be prepared to extend the arrangements for medical students to live in at their hospitals to receive *instructions in* such subjects as obstetrics and fevers The council believe that psychological medicine must find a more important place in the training of the doctor of the future, and that organised instruction supplemented by visits to institutions should introduce him to the public health and welfare services Every student should attend confinements in the home as part of his training The council think that there should be better coordination of London postgraduate facilities and suggest that here the British Postgraduate Medical School, with an office in the academic centre of London, has an important part to play in advising graduates where their needs could best be met

ACCIDENTS AND ACCIDENTS

THE *National Insurance Gazette* of Sept 24 suggested that approved societies might help in distinguishing accident prone workers in order that this small minority might be removed from dangerous occupations. The societies should certainly have among their records many relevant data, but any analysis of them for such a purpose would have to be carefully considered Those workers named as being accident prone by the societies might be penalised if they were debarred from a dangerous occupation without being provided with a safer post carrying comparable rewards, and there might well be grounds for legal complaint against the body which had so stigmatised them Nor are the records of approved societies necessarily complete enough to allow of fair judgment They usually record only such relatively serious accidents as keep a man from work for more than three days, but take no note of minor accidents Yet in deciding whether or not a worker is accident prone careful records must be kept of all accidents, even the most trivial As Vernon has pointed out,[1] for all we know the trivial accident may be as reliable an index to proneness as the serious one Even the fact that a worker has had several minor or major accidents may not mean that he is accident prone his job may be intrinsically dangerous, the machines insufficiently guarded, or the lighting bad, and others doing the same job may sustain an equal number of accidents Some accidents, as we all know, are the fault of other people If he was one of a group of workers doing the same job under comparable conditions, and he had many more accidents than his mates, a man might perhaps fairly be called accident prone Even then it would be necessary to ensure that he had no physical disability—like defective eyesight—the correction of which might do away with the proneness Real accident-proneness is presumably psychological, not physical, and the diagnosis can perhaps best be made in the factory, and individually, by the works doctor—possibly helped by a psychologist Physical causes of incoordination must of course be excluded If a worker really is accident prone, he can usually be transferred tactfully to some less dangerous job without having a label attached to him

DR **ROBERT J ROWLETTE**, PRCPI, has been elected president of the Royal Academy of Medicine in Ireland

Prof **HARRY PLATT** will deliver the Robert Jones lecture at the Royal College of Surgeons on Wednesday, Nov 4, at 3 15 PM He will speak on congenital dislocation of the hip joint At the same hour on Thursday, Nov 12, Mr **L R BRAITHWAITE** will give a Bradshaw lecture on the rôle of bile *in duodenal* regurgitation

LABELLING OF CASUALTIES—Where necessary casualties are labelled by first aid parties (light rescue parties in London civil defence region) at an incident Tie on labels, with a symbol written on them, are used and, if possible, the forehead of the patient is also marked with the same symbol in indelible pencil The symbols used for *marking and their interpretation* are as follows —

X—Requires priority of removal from the incident and of examination when reaching hospital This is used mainly, but not exclusively, for wounds of the chest and abdomen and for internal hæmorrhage

T—A tourniquet has been applied The time of application of the tourniquet and subsequent releases should also be indicated on the label

H—Severe hæmorrhage has occurred

M—Morphine has been given The time of administration and dose should be written on the label

C—Contaminated by persistent gas

XX—Poisoned by phosgene gas or suspected of having been so poisoned

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[1] Vernon, H M Accidents and their Prevention, Cambridge, 1936, p 46

Public Health

Stubborn Good Health

THE summary report[1] of the Ministry of Health reveals the state of the country's health in 1941–42, "stubborn good health" Mr Brown calls it—there were no sensational events, and but a few outbreaks of disease on a small scale Epidemic prevalence of cerebrospinal fever continued but decreased from 12,711 to 11,077 notifications and its mortality from 62 to 52 per million population The case fatality of recognised cases remained at about 20 per cent Diphtheria increased from 46,281 cases with 2180 deaths to 50,797 cases with 2641 deaths despite the great increase in inoculation The number of children immunised can hardly be less than 3,000,000, about a third of the under-15 population, but "it is generally recognised" the report states, "that no substantial improvement in incidence or death-rate can be expected until at least three-quarters of the child population of the country have been immunised" This statement needs careful reading if it is not to be misunderstood There was no typhus and only two cases of native malaria, though outbreaks of both had been anticipated Under "droplet infection" we are told that apart from other inconveniences of droplet-spread diseases they cause an enormous interference with the war effort "Unfortunately the supply position did not allow the sale of handkerchiefs free of clothing coupons, though this might have been a great help to the campaign"—sounds rather a lame excuse There has been more venereal disease especially primary syphilis, since the war started, judging by cases which attend clinics or occur in the Services, new syphilitic infections have gone up by 70 5% But as notification is not compulsory the position is uncertain and it should not be forgotten that just before the war the incidence of syphilis had fallen to a level never known before At the end of 1941 it was about the same as at the end of 1932 Gonorrhœa reckoned to be 8–9 times as frequent as syphilis, has increased less in the war period The report speaks of the value to the public of the Pharmacy and Medicines Act 1941 which prohibited the advertisement of articles for the treatment of diseases, such as Bright's disease and diabetes, or for procuring abortion, and required disclosure of the composition of any substance recommended as a medicine But although no preparation may be sold as a cure for Bright's disease or tuberculosis, it is still legal to sell kidney medicine or lung tonic which to those who waste their money on them mean the same things, and anybody can sell female pills to remove irregularities The number of women who received antenatal attention, either at clinics or through arrangements with practitioners, was 74 5% of the total number of births, 97% of registered live births were visited by health visitors, and 68% of children born attended welfare clinics Much of the report is devoted to war-time measures and there is a chapter, austerely non-committal, on hospital policy

The black spot is tuberculosis, which in 1941 appeared to be repeating the unfavourable trends noticed in the last war Fatal tuberculosis increased 12% for both sexes in England and Wales, and 15% for males and 25% for females in Scotland, over the 1938 rates The greatest increases were in fatal meningitis, which were 34% in males and 38% in females in England and Wales, and 37% in males and 60% in females in Scotland In the last war there was no increase in meningitis Though fatalities from tuberculous meningitis in England and Wales increased from 1684 in 1938 to 2367 in 1941, even this is less than half the number for any year in the last war Fatal tuberculosis in children under 5 years and in those aged 5–10 has increased greatly since the war started From 1914 to 1916 there was a *decrease* of deaths from tuberculosis in under fives of 6% in males and 2% in females From 1939 to 1941 there was an *increase* of 46% in males and 51% in females In 1938 notifications of respiratory tuberculosis were 43 205 and deaths 21,930, in 1941, the notifications were 46,256 and deaths 23,633 Of other tuberculosis the 1938 figures were 14,888 notifications with 4246 deaths, and those for 1941 (subject to revision) 13,720 notifications and 5037 deaths In Scotland all tuberculosis increased from 7176 notifications with 3526 deaths in 1939 to 8302 notifications with 4173 deaths in 1941 Local reports on the position of tuberculosis must be read with caution, for often an increase is due not to new cases but to transfers of existing cases from other areas But the figures for the whole country show a real rise in incidence

Shelter Health

Finsbury suffered severely from bombardment in the first half of last year and on the whole has been as much disturbed by war as any part of the country, yet its health record for 1941 was good Dr C O S Blyth Brooke in his brief annual report remarks "though the community was sleeping in air-raid shelters to a very large extent there was a marked absence of epidemic disease," and Dr A G Thompson in his report of *Lambeth* which suffered as badly as Finsbury, has much the same to say Indeed, from all areas comes the same story—in spite of everything being favourable for the spread of infection, the infectious diseases in Britain remained at the lowest level in our history

The almost complete absence of typhoid is the most remarkable epidemiological feature of 1941–42, for in many of the great towns air-raids caused great destruction of water-works and fouling of public supplies was inevitable Yet no epidemics are reported In July there were only 23 notifications of typhoid and 39 of paratyphoid in England and Wales against 1056 for the two in July, 1941 On the other hand, there were 696 notifications of dysentery against 360 in July, 1941, but most of the dysenteries were of the Sonne type which is not dangerous Again shelter-life should be conducive to droplet-infection, but if droplet dissemination was more concentrated and widespread than in peace-time, no increase of disease from it has occurred so far Rationing, anxiety, exposure and shifting cannot be favourable for the well-being of the population, yet the public health was never better Maternal mortality maintained the low level of little more than 2 per 1000 in spite of the difficulties of confinements Before the days of the Committee on Maternal Mortality we looked at 4 per 1000 as a satisfactory death-rate This committee settled that half of the maternal deaths which were occurring were practically preventable, a further quarter theoretically preventable and the remainder inevitable in the existing state of knowledge We therefore now look to 2 per 1000 as a satisfactory rate and it is surprising how near we have got to it

Another pleasant surprise is the rarity of food-poisonings especially of those due to salmonella Meat rationing may have had something to do with this, for many of the British delicatessen generally cooked and bought in conditions in which they could only escape infection by accident have disappeared In the early days of the war several outbreaks of trichinosis from eating raw sausage-meat, and of paratyphoid spread by artificial cream were recorded, but we have had little of them since the middle of 1941

From the School Reports

The death of a school child is a domestic tragedy, a national misfortune and, what concerns us most, usually a medical failure, for most deaths between 5 and 15 are due to diseases which in theory are entirely preventable and in practice generally curable Dr Stephen Rowland in his school medical report for *Northampton* borough gives a table of the causes of death among children in this age-group during the past 15 years There were 299 of these deaths, 1 7% of deaths at all ages Excluding 66 due to "other conditions" not specified, but which include all unavoidable fatalities, of the remaining 233 there were 35 due to violence, the rest, with one possible exception, were due to infections Violence with 11 7 of all the deaths comes third on the list In 1927–36 it caused an average of 2 3 deaths per year, in 1937–41 an average of 2 4, but in 1940 there were 4 and 1941 there were 6 such deaths Tuberculosis stands first with 17 1% of the total, but whereas in the first two quinquennia it caused an average annual of 3 8 deaths, in the last quinquennium its average was 2 6 Diphtheria stands second with 39 deaths, or 13 0% of the total, and from an average of 2 3 deaths per annum in 1927–36 it rose to 3 2 in 1937–41 Respiratory infections caused 33 deaths, appendicitis 10, measles and whooping-cough 8, and scarlet fever 2. Meningitis, presumably forms other than tuberculous, caused 9 deaths. Heart disease, rheumatic fever and nephritis together caused 46 deaths or 15.4% of the total. Some of the heart cases may have been congenital, but there is a growing suspicion that the nephritis of children is sometimes rheumatic in causation. The deaths are few, but their distribution is comparable with that in other areas. The zymotic death-rate for the whole population of Northampton in 1941 was 0.10 per 1000 made up of 11 deaths, 1 due to measles, 2 to whooping-cough, and 8 to diphtheria. There were 86 notifications of puerperal pyrexia (about half of them were non-residents) giving an attack-rate of 49 per 1000 births. Only 1 death was due to puerperal infection. In the old days of pueperal fever notification there were generally more deaths than notifications; nowadays the fatality of puerperal pyrexia depends upon the completeness of notification, but we have noticed that districts reporting a high incidence of pyrexia not only show a low case-fatality, but also a low infection mortality-rate per 1000 births.

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[1] Cmd 6340 HMSO Pp 35 9d

The death-rate in *Bootle* rose from 12.4 in 1939 to 17.3 in 1940 and to 23.3 in 1941 but Dr. E. T. H. Wood warns us against interpreting this as a sign of deterioration of the health of the borough, for the composition of the population has been much altered by evacuation. There were, however, some bad spots. Infantile mortality was 108; whooping-cough caused 24 deaths and diphtheria 15. The "young child mortality," or deaths between one and five years of age, was 66 deaths, of which 17 were ascribed to whooping-cough, 13 to bronchitis and pneumonia, 13 to violence, 6 to diphtheria and 5 to tuberculosis. Of the infant deaths only 22% occurred during the first week, but 35% in the first month. It is clear that in Bootle in 1941 the dominant destroyer of the young was whooping-cough. Only 443 notifications of whooping-cough were received so the fatality based on deaths directly ascribed to the disease and the notifications was over 5%. Pertussis falls heaviest on infants, and in Bootle, of 122 deaths of infants under a year old, 7 were ascribed to whooping-cough; but 31 to bronchitis and pneumonia, 10 to convulsions and 11 to enteritis, and it is likely that a high proportion of these 52 deaths were really caused by pertussis. The infantile mortality was higher in legitimate than in illegitimate children (108 to 98). The numbers are too small to give significant results, but they suggest some lethal influence falling on all infants alike.

In *Ilford* the infantile mortality-rate was 40.9. Of the 67 deaths which made up this rate, 7 were ascribed to whooping-cough, 16 to bronchitis and pneumonia, and 5 to diarrhœa. In the whole population 1161 cases of whooping-cough were notified with 9 deaths, giving a fatality, based on deaths directly ascribed to whooping-cough and number of notifications, of less than 1%.

In reading the vital statistics of 1941 of the health of infancy and childhood whooping-cough is the outstanding factor which causes local and topical departures from normal. This disease has been notifiable since the war, but no disease can be notified unless it is diagnosed and, generally speaking, whooping-cough cannot be diagnosed in the absence of the whoop. Infants with pertussis rarely whoop and many of them die from the disease before the suspicion of whooping-cough is aroused—indeed many are not seen by doctors until moribund from pneumonia or enteritis. In older children, whooping-cough is readily recognised but is of low fatality, so in epidemics of whooping-cough the "official" fatality is highest where notifications are fewest.

Infectious Disease in England and Wales

WEEK ENDED OCT. 10

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 2613; whooping-cough, 972; diphtheria, 991; paratyphoid, 11; typhoid, 6; measles (excluding rubella), 4650; pneumonia (primary or influenzal), 511; puerperal pyrexia, 192; cerebrospinal fever, 57; poliomyelitis, 23; polio-encephalitis, 2; encephalitis lethargica, 3; dysentery, 209; ophthalmia neonatorum, 104. No case of cholera, plague or typhus fever was notified during the week.

Deaths.—In 126 great towns there were 1 (0) deaths from enteric fever, 1 (0) from scarlet fever, 8 (0) from measles, 6 (3) from whooping-cough, 12 (0) from diphtheria, 57 (8) from diarrhœa and enteritis under two years, and 12 (0) from influenza. The figures in parentheses are those for London itself.

Coventry reported the fatal case of an enteric fever. There were 7 deaths from diarrhœa at Birmingham.

The number of stillbirths notified during the week was 229 (corresponding to a rate of 35 per thousand total births), including 25 in London.

In England Now

A Running Commentary by Peripatetic Correspondents

I WAS ashamed when one of my fellow students rebuked your correspondent for saying that we were illiterate. Of course we are. And although it is true that some textbooks tend to foster illiteracy ("we were fortunate in persuading Professor X to undertake the revision of the *Digestive System*"—Gray, 28th edition; "curves, where absolutely necessary, should not be less than ten times the cross-sectional diameter of the sewer"—Frazer and Stallybrass), yet they are not the real cause of the trouble. The real cause, surely, is that if we open a serious book we feel that it has to be a medical book. In spite of Osler, the literary student is a rarity; and the literary doctor not much less rare. Too often the ones we can point to today—Maugham, Cronin, Brett Young—have not attained that distinction in medicine to which we all, when young, aspire. One wonders even whether Sir Thomas Browne would have known his Osler as well as Osler knew his Sir Thomas Browne; whether there is not some impossibility in the attainment of two such divers skills as the re-ordering of words and bodies. And in any case one knows darn well that there are quite enough books to be read without going to the library for more. In the five years of his study, it is hopeless to ask the student to have a clear conscience when his reading strays far afield. The Americans have tried to solve the problem by four years' compulsory study at a university before medicine proper begins. And even then—

* * *

The popular press and the less humorous professional humorists no longer seek to amuse us by sallies at *ersatz* productions. Not long ago a reference to a German suit of clothes dissolving in the rain was always good for a laugh, although a little thought would have disclosed our own dependence on similar manufacturing processes. The invention and application of substitutes has, in fact, been a major industrial process for years to an extent scarcely believable by the man in the street. Many of the fabrics used in female clothing (except of the most expensive kind) are ersatz, derived from wood pulp. "Silk" stockings, "poplins" for underclothes and dresses, and heavier fabrics for suits and dresses may all begin as logs of wood. Other processes utilise sea-weed and various industrial by-products as the starting-point.

I was recently taken through a mill where some of these fabrics are woven. The mill was built originally for cotton weaving, but it closed down in the cotton slump after the last war. The present owners specialise in the "fancy" rayon trade. The raw material depends on no vicissitude of weather in the Americas or India, no eccentricity of Customs legislation or freightage facilities. It is made in this country largely by the two firms controlling the major patents—a few small firms still manage to survive in competition, using other methods of production. Although on a very large scale, everything is, as it were, custom built. The fibre can be spun to any required thickness or weight by varying the composition and consistency of the gel and the size of jet through which it is extruded. The weaver merely specifies his requirements. He has already worked out his pattern and decided on the weight and finish, and is able on one and the same machine to turn out the thinnest, most silk-like "poplin" or a rough, heavy "tweed." The actual weaving does not differ from the weaving of natural cotton, silk or wool except in detail. The old bogies of temperature and humidity are no longer matters of chance. Air-conditioning achieves the optimum of both and climate no longer controls the site of a mill.

Science is plentifully on show in this mill. The initial process of transferring the fibre from the reels on which it is originally wound when produced to reels the correct shape and size for the subsequent machines is itself a bewildering achievement. It seems absurd that half a dozen girls and women can tend and control these hundreds of bobbins dazzlingly spinning amidst the whirling machinery, but the miracle is brought off all day long. Somehow, without fuss or apparent effort, the correct bobbins get wound to the correct degree with fibre of the correct colour and weight. Hands plunge into spinning wheels and bars and emerge scatheless. Surely, here is a ready-made field for clinical science to study the nervous mechanism of coördination. But the pinnacle of the machine age is reached in the actual weaving "shed." This is a large stone-floored room crammed with looms. I was told that there had been 480 looms in this shed, and the information was proudly added that 68 had been removed in the interests of efficiency (not, mark you, safety!). I found it impossible to conceive that 10 more could possibly have been inserted into the available space. The really impressive things in a weaving shed are the deafening noise and the constant movement, and it is this combination which conveys the almost overpowering sensation of being in the very hub of the machine age. For a quarter of an hour after leaving the shed the ears feel numb and dead, and the head in a whirl. The shuttle on each machine moves to and fro several times a second, and the machines are so close that a big man can scarcely squeeze through sideways. In addition, there are overhead belting and shafting. I was informed that deafness is rarely encountered in claims for compensation, that even the slightest accident such as a cut finger is unusual, and that any more serious mishap is almost unknown. The operatives start as soon as they leave school and rapidly acquire a machine sense.

I had never understood how the weft was insinuated through the warp and had visualised a process like darning where the weft thread is carried over and then under the warp threads. But my imagination failed at conceiving a machine to do this. Of course, the process is managed quite differently. It really begins at an earlier stage. The warp is supplied on a cylindrical roll as a number of single, parallel threads. This roll is placed on a stand and each thread or group of threads (depending on the design of the fabric to be woven) is picked out by hand with a sort of crochet hook and drawn through and tied to a ring attached to a horizontal bar lying parallel to the roll. (Picking out these threads all day long is the most soul and eye destroying job I can conceive.) Each thread of the warp is thus separately controlled by the little metal ring to which it is attached. The bar carrying all these rings falls horizontally into place in the loom. The process of weaving then consists of spreading alternate warp threads in opposite directions in a vertical plane. A bobbin carrying the weft thread is then shot across the machine from side to side through the Vs formed by the warp threads and is hammered into the notch of the V by a heavy bar moving synchronously with the weft bobbin. The next movement of the machine spreads the warp threads in the opposite direction and the weft bobbin shoots back to its original side and is again hammered home. If different colours are being used, there is a separate bobbin for each colour, and an automatic adjustment determines the number of times each bobbin is used. The colour of the warp threads is, of course, the same from beginning to end. It is a fascinating and dazzling spectacle to watch the flashing to and fro of the bobbins, the gradual growth of the pattern and the rapid movements, in exact synchronisation, of every part of the machine. This multiplied by 480, plus the accumulation of noise, provided enough stimulation for my nervous system to last me a week.

The production of clothing from wood pulp and coal by-products is one of the many processes embraced in the industry of plastics. The modern developments of this industry provide a fascinating chapter in the history of science. In many cases the ersatz is more durable and suitable for its particular purpose than the natural material previously used. Certainly natural cotton has few if any advantages over rayon, and although rayon "wool" or "silk" is not as warm as the natural product it is almost as lasting and considerably cheaper. Materials can be as attractive both in colour and design. In fact, the last thing anybody with the slightest acquaintance with the industry would do is to laugh at ersatz clothing.

They were arranging the holidays at Health House and the massive building was thronged with practitioners. Under the State Medical Service each had a month's vacation, half of which, however, had to be spent doing somebody else's job. For the first few years this had given rise to a certain amount of friction, evasion and even intrigue, so now for one and all it was being decided by the drawing of lots, which was taking place in the Great Hall.

In a lobby a distinguished gynæcologist was making lamentation. "An assistant in a Welsh colliery practice! I ask you!" The others laughed sympathetically. "I've got to go to a mental hospital," said a surgeon, "and if there's one thing I hate ..." "What about me," said a small, pale man bitterly, "I, who get sea-sick on the Serpentine, have got to go to New York as ship's surgeon." The harsh laughter disturbed the country GP who on the back of an envelope was explaining to a testy consultant how he got from Lower Rumbling to Upper Wilting, at both of which places he had surgeries. "Some of the bottles haven't got labels, but I expect you'll know them by their smell. Anyhow you won't be in a worse mess than I—a fracture clinic! Heavens! What's a good book?"

An angry, surly, sardonic hum rose from the room. "It's Popplecock we've got to thank for all this," said a skin specialist darkly. He was sentenced to fourteen days in industrial Wigtoun and felt vindictive. "Yes, Popplecock, the Minister for Positive Health, he got it passed at last year's conference. I'm waiting to see what he draws himself." He looked at his watch. "He's almost due now." In the Great Hall a hoarse voice was calling the names and a line of anxious men and women were streaming up to the central band-stand platform where a giant top-hat rotated briskly. As each went by he put his hand in and withdrew a slip. Some read their slips immediately, most when they got down on to the floor, a few didn't dare look until they were outside. "John Popkins, James George Poplington, Henry James Popplecock ..." The Minister was a jaunty little extrovert; he felt pleased with himself and the world in general; everything turned out all right for him, simply because he ignored things that didn't and exercised a certain amount of—er—foresight. He took his slip, read it as he sauntered down the steps, and laughed—or did he start to laugh a fraction of a second before he read it? "What have you got?" asked one of a savage group, waiting for him at the bottom. The Minister handed him the slip. "You will proceed to Aylesbury and for 14 days act as Editor of *Lancet*."

* * *

I had always been rather windy of female medical students, never more so than when one came and watched us taking blood for Wassermanns. We had been doing from 12 to 16 a morning. ("Nothing to worry about, mother. Just a little prick. Why, mother, what are you worrying about?" Each time I said them the words sounded more hollow.) Standing there with the utmost charm she watched us driving confidently into the thin, groping wildly in the succulence of the fat; the strain grew so bad that I cracked. "Here," I said, handing over the syringe. "Do it on me, and we'll see if it hurts or not." She did, and it hurt like hell. "You do it on me," she said. "It's only fair." Seizing her condyles in a grip vice-like with agitation, I did what seemed a model puncture. "Hurt?" I said. "No," she said, biting her lips, "not at all." But later on she reported throbbing and told her colleague that she expected never again to have the use of the vein; and later still, when they came to tea, she exhibited with unfeeling pride a large bruise on the condyle. My confidence, never great, ebbed to nothing. I write now to report that Sydney Smith knows what he is talking about. "Women," he says (*Forensic Medicine*, p. 111), "are much more easily bruised than men, owing to the greater delicacy of the tissues. A slight pressure with the fingers on the arm of a woman, especially if she is stout and not accustomed to work or exercise, may produce a definite bruise." To show that no account of her charm could be exaggerated, I ought to say that we added this insult to her injury, and she affects to remain our friend.

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M P

SIR WALTER WOMERSLEY's unsatisfactory reply to a question asking whether he will now appoint pensions appeal tribunals "in view of the fact that medical men of suitable training and experience are now available" was that it would be done "as soon as practicable," and Mr Arthur Greenwood, on behalf of the Labour Party asked for time to be allocated to an early discussion of this subject There are said to be some thousands of cases already in which reference to an appeal tribunal would be desirable and it is recognised that the setting up of this body after the last war, in 1919, was a very useful measure The total number of doctors required for the work is not great, and if a beginning was made by establishing one tribunal for each civil defence region, with an officers' appeal tribunal in addition in London the immediate need would be met The number of senior officers of the Army Medical Service who have reached the age of retirement, or who are retiring after holding the rank of major-general for four years can be calculated and this field of choice alone would provide men of long Service experience, administrative ability and professional standing Men are also retiring from the other two Services under the age-limit, and others are being invalided out Apart from the Services there are retiring medical officers of health, many of whom have had service experience, and retiring medical officers of the Government and other services The pensions appeal tribunal of the last war was a tribunal of the House of Lords, appointed by the Lord Chancellor Its members were a barrister or solicitor of not less than seven years' standing, a disabled officer or other rank (for an officers' or O R tribunal respectively), and a doctor The legal member acted as chairman and was often a county court judge, the military and medical members acted as assessors In practice the doctor was also usually a man with Service experience, this judicial constitution with a background of Service experience made the tribunal a valuable body

Even if, in the first instance, more than one tribunal for each civil defence region were set up it would be possible to find twenty medical men of high standing and long Service experience without calling on the hardworked general practitioner, or on the younger men required for active employment in the forces or in the hospitals Some of the men who retire from the Services do enter other employment, but there are certainly enough available to set the tribunals on their feet It is hoped that the Minister will bow to the arguments which will be put before him, but his resistance up to date has been difficult to understand At present an application for a pension which has been refused by the Ministry can only be reopened by bringing personal persuasion, usually through an MP, to bear on the Ministry If this is successful the papers of the case are referred for opinion to one of the Service departments But this arrangement means that the Minister is appointing a doctor of his own choice to reconsider the case and smacks too much of a combination of judge, jury and appeal court, combined in the Minister, and is unfair to the Service department concerned It does not compare for a moment with an appeal to a duly constituted court appointed by the Lord Chancellor All Service authorities would welcome these tribunals and the British Legion appreciates how much a judicial appeal means to the men and women concerned

QUESTION TIME

Pensions Appeal Tribunals

Dr HADEN GUEST asked the Minister of Pensions whether he was now in a position to appoint pensions appeal tribunals, in view of the fact that medical men of suitable training and experience were now available —Sir W WOMERSLEY replied A few doctors well qualified for pension work have recently become available and have been engaged by my department to meet its increasing requirements and to replace younger men released for service with the forces, but the evidence shows that the general position is becoming more rather than less difficult Therefore, I can only repeat my undertaking to set up pensions appeal tribunals as soon as practicable

Dr GUEST Does the Minister know that considerable numbers of medical men who have been serving in the Armed Forces become available at regular intervals when seniority or the fact that they had held certain rank for a period of four years necessitates their retirement, that they are men of long service, administrative experience and high medical standing and that at the present time these gentlemen are very often not able to find suitable work and could be placed as members of pensions appeal tribunals with very great advantage to themselves and to the country ?—Sir W WOMERSLEY My director of medical services is in constant touch with the director of the medical services of the Armed Forces Doctors who have been discharged from these forces have been sent to my department, interviewed and employed —Major J MILNER Is the Minister aware that quite a number of the members of this House are wholly dissatisfied with the position, and is he prepared to submit the evidence to which he referred to a committee of members or to his own advisory committee ?—Sir W WOMERSLEY Certainly, I am just as dissatisfied, but you cannot make bricks without straw, and until I get the right men I cannot do anything —Major MILNER That is precisely what the Minister can do

Mass Radiography Apparatus

Mr W J THORNE asked the Minister of Health what was the cost of mass radiography apparatus, are local authorities called upon to pay the purchase tax, and whether the Government would make a grant or allow a special loan to be made for the purchase of these instruments —Mr E BROWN replied The production of the standard apparatus has not yet reached a stage at which its cost can be closely determined, but it is expected to be in the region of £1500 Apparatus of this kind is not, I understand, subject to purchase tax It is not proposed to make special grants towards this particular item of cost to those county councils and county borough councils who will be concerned, but substantial Exchequer assistance is being given towards the cost of the treatment of tuberculosis Sir FRANCIS FREMANTLE Is the scheme for training doctors and mechanics to deal with this most complicated apparatus in full swing and able to keep pace with the supply of instruments ?—Mr BROWN Yes

Tuberculous Men and Military Service

Mr RHYS DAVIES asked the Minister of Labour whether he had considered the protest from the Manchester city council to the effect that within the city 328 cases discharged from the forces had been referred to the local health authority for treatment for tuberculosis, *that 39 cases of men* suffering from that disease were known locally before enlistment and that 4 were known to his ministry before being called up, and what reply he had tendered to the council's protest —Mr E BEVIN replied I have not yet received the resolution referred to, but inquiry is being made He added that he had not read the report of the council's discussion Until he received the question he did not know that the discussion had taken place He had sent for a full report of what was said, and he could not prejudge the matter When he had the report he must consult the medical boards which passed these men —Mr HENDERSON Is it not over a week since this question was handed in ?—Mr DAVIES Why does the Minister not adopt a suggestion which has been made very often ? As the full medical records of the vast majority of *men joining the forces are to be found* in approved society records, why does he not consult them before the men are taken into the forces ?—Mr BEVIN My hon friend knows that there is nothing which represents such poor information on medical conditions as approved society certificates —Mr DAVIES The Minister has been a secretary of one ?—Mr BEVIN Yes, I have

Glasgow Smallpox Epidemic

The Secretary of State for Scotland informed Mr T, E GROVES that it was not proposed to take proceedings against the shipping company responsible for the steamer from Bombay which arrived in the Clyde on May 29 last and in which there was discovered a case of smallpox The shipping company was not responsible for the failure to notify smallpox on the ship since the ship's doctor had diagnosed the case as measles complicated with pneumonia Obviously ship owners and shipmasters could not carry out any of the duties they had regarding smallpox on shipboard until its existence on the ship was recognised Nor did any blame attach to a ship's doctor who made a mistaken diagnosis in good faith Smallpox was difficult to distinguish in its early stages from measles The case was first recognised as smallpox on admission to hospital

In answer to a further question Mr Johnston stated that the total amount paid by Glasgow corporation for lymph used during the recent smallpox outbreak was £5102, of which £1075 is due to be recovered from the authorities of adjoining areas to whom the corporation issued supplies These figures do not include lymph obtained by the corporation through the Department of Health for Scotland which is valued at about £6000 The total amount paid in respect of fees for vaccinations performed during the outbreak was £10,469 , and 358 doctors and 190 senior medical students received fees for vaccinations the highest amount paid to any one doctor being £271 2s 6d

Typhoid and Paratyphoid Fever

Typhoid and paratyphoid fever became separately notifiable only towards the end of last year The number of cases notified in England and Wales in the past five years has been 1937, 2150 , 1938, 1321 , 1939, 1479 , 1940, 2848 , 1941, 4762 In 1941 there was an exceptional outbreak in the Liverpool district (Mr Brown replying to Sir E Graham Little.)

Incidence of Diphtheria

Mr Brown informed Mr J Griffiths that the number of cases of diphtheria notified during the first three quarters of this year was 29,939 This represents a decrease of about 6500 on the corresponding period last year The provisional mortality figures for the first half of 1942 show a decrease of 0 8% on the corresponding figures for 1941 As the disease is most prevalent among children it is being combated by the Government's policy of advocating immunisation of all children under 15, which has already resulted in the immunisation of over 3 million children since the beginning of 1940 —Prof A V Hill Does the Minister expect to get sufficient children immunised by propaganda alone, against the counter-propaganda of interested agencies financed by sentimental old women ? Mr Brown Yes, I expect propaganda methods to be sufficient —Mr W Leach Is the Minister aware that all his efforts so far have not reduced the death rate at all ?

British Troops and Yellow Fever

Mr Alfred Edwards asked the Secretary of State for War whether any cases of yellow fever had been diagnosed in British troops in any area in which they had been stationed since the commencement of the present war —The Secretary of State for War informed Mr A. Edwards that three cases of yellow fever had been diagnosed in British troops since the beginning of the war He added that vaccination against yellow fever of troops proceeding to endemic areas was introduced before the war, and has been continued without interruption. Most of the vaccine used is manufactured in this country, but some supplies are obtained from the United States of America

Mr Leach asked how many doses the British Army in Africa took in 1941 of yellow fever vaccine, virus 17D, manufactured by the Rockefeller Foundation , if he was aware that this vaccine was suspected of having caused 28,000 cases of jaundice in American troops with 68 deaths during the six months January to June, 1942 , whether there had been any jaundice in the British Army amongst soldiers inoculated with yellow fever vaccine , and whether he had made any inquiry into the possibility of harmful effects of the yellow fever vaccine now being used on British soldiers —Sir James Grigg Without instituting protracted inquiries locally it is impossible to say how many of the doses of yellow-fever vaccine administered to British troops in 1941 were manufactured by the Rockefeller Foundation I am aware that certain batches of this vaccine have been suspected of causing cases of jaundice among American troops None of the cases of jaundice which have occurred among British troops can be attributed to the inoculation against yellow fever The effects of inoculation are always carefully watched and no harmful effects among British troops have been noticed as a result of inoculations against yellow fever

Incidence of Duodenal Ulcer in the Army

The proportion of men invalided from the Army suffering from duodenal ulcers is about 11% of the number invalided on account of all diseases There is no evidence to show that Army life renders men more liable to duodenal ulcers than they would be in civil life and no special inquiry is necessary (Sir J Grigg replying to Sir I Albery)

Medical Committee on Bread

Sir E Graham-Little asked the Parliamentary Secretary to the Ministry of Food whether the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council now replaced the scientific advisers who had been, before February, 1942, responsible for the constitution of the bread supplied under the control of the Ministry —Mr W Mabane replied The advisory committee, as its name indicates, is concerned with foods which are rationed It has not, therefore, considered bread

Electrical Hearing-aid Apparatus

Mr W Brown asked the President of the Board of Trade what steps he was taking to ensure that a sufficient supply of the special dry batteries necessary for electrical amplifying valve types of hearing apparatus for the deaf shall be available —Mr H Dalton replied Last year my predecessor arranged that all new hearing aid apparatus should be made to take a standard battery, which could be supplied without undue difficulty, and most existing sets have been converted to use this type of battery I have now arranged for an increased and improved production of the special batteries required for apparatus, which, for various reasons, cannot be converted

Colonial Medical and Nursing Services

The Under Secretary of State for the Colonies informed Mr Creech Jones that the information available in the Colonial Office showed that 2 medical women had been appointed in the colonial services since the war and 219 nurses He emphasised, however, that there were many appointments made locally of which the Secretary of State had not received information

Seamen and Frost-bite Injuries

The Parliamentary Secretary to the Ministry of War Transport informed Mr Walter Edwards that full instructions had been issued for the prevention and treatment of frost bite among wrecked seamen Each man was provided with a rubberised protective suit to guard against exposure in lifeboat or raft, in addition to the means provided in the lifeboats and rafts themselves, for protecting the occupants against exposure. Specially designed protective clothing was issued to crews of ships employed in Arctic waters Oil was also provided for further protection and for massage, but he was not yet satisfied that the importance of using this oil was properly understood by seamen

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PALESTINE

BLOOD SEDIMENTATION IN PULMONARY TUBERCULOSIS

At the hospital in Safad 732 blood-sedimentation tests have been carried out on 217 cases of pulmonary tuberculosis The Linzenmeier method was used, and the results were found to run parallel to the clinical course of the disease , the test, in fact, was a more accurate guide to the condition of the patient than were sputum tests for tubercle bacilli It was regarded as being significant in prognosis since cases with an accelerated sedimentation-rate during the whole period of observation either died or left hospital showing no improvement The rate was influenced by menstruation, rising by 30–100% before a period

LABORATORY DIAGNOSIS OF TYPHOID

In a survey of the bacteriological and serological findings in 786 cases of typhoid seen at the University Hospital, Jerusalem, during the past 12 years, I Gurewitch reports that during the first 7 years 90% of cases were diagnosed by the Widal test, and a positive blood-culture was obtained in only 10% In the last year the organism has been isolated from the blood in 44% of cases The reliability of the Widal test has been confirmed by the findings in many thousands of tests in the hospital laboratory The reaction appears a few days earlier in children than in adults A high titre of O agglutinins in the serum of a typhoid patient indicates a favourable prognosis Occasionally an unspecific Widal reaction is seen in cases of malignant disease with cachexia

During 1940–41 the numbers of cases of typhoid and paratyphoid in Jerusalem rose to epidemic level The severity of the disease also increased thus in 1935–39 there were no deaths among 114 cases admitted to the University Hospital, while in the epidemic there were 11 deaths among 135 cases Braun and Dreyfuss, writing in the journal *Harefuah*, describe the clinical course as being longer than usual, and the toxæmia and the tendency to relapse more pronounced Collapses, rigors and delirium were common, and ulceration of the throat was seen in a relatively large number of cases, progressing in one case to cancrum oris with death Other complications were jaundice, pneumonia and abscesses in the muscles Avitaminosis was common; especially deficiency of vitamin C and of vitamin-B complex Chemotherapy was used with results which will be reported later Small blood-transfusions were useful as a supporting measure Extra vitamins were given only to those cases which showed a deficiency

ACROPARÆSTHESIA

In the same journal I Schlenderer reports the treatment of acroparæsthesia with injections of vitamin B and with short-wave therapy Six cases treated in this way all recovered

Letters to the Editor

REHABILITATION CENTRES

SIR,—Members of the British Orthopædic Association recognise the value of measures already adopted by the Ministry of Health in introducing rehabilitation into EMS orthopædic, fracture and accident services They are not, however, satisfied that the later stages of rehabilitation have been adequately developed throughout the country, and for this particular purpose they urge the importance of establishing special rehabilitation centres, in association with existing orthopædic, fracture and accident services, under the same administrative and surgical control, but as a rule geographically separated in order to avoid the hospital atmosphere, and affording all facilities needed for the completion of treatment right up to the stage when work can be resumed From undoubted evidence of grave wastage of manpower through accidents, they believe that the developments recommended are of immediate urgency in the prosecution of the war

We feel it should be clearly understood that the orthopædic surgeons of the country are wholly in favour of this constructive medical and sociological movement Rehabilitation should begin very soon after the accident or wound, and be carried on throughout the patient's period in hospital in the form of occupational therapy and gymnastic or remedial exercises There remains as a logical and very necessary development the organisation of centres where the final and more concentrated stages of rehabilitation are given to enable the patient to be returned to the Services or to industry with the least possible delay

G R GIRDLESTONE,
President of the British
Orthopædic Association

Headington, Oxford

TIME OF UNION IN FRACTURED TIBIA

SIR,—Much has been heard of the fractures which were said to unite more quickly thirty years ago than they do today It is said that fractures of the tibia then united in 8 weeks, whereas now they unite only in 12 or more weeks If this was true it might be reasonable to suspect measures of treatment which have been introduced since then—the use of plaster, the unpadded cast, and the more general practice of rigid and continuous immobilisation But I submit that it is not true, and that fractures uncomplicated by distraction or infection are uniting as quickly today as they did then I suggest that most fractures of the tibia in adults were never soundly and safely united in 8 weeks—that they were united only firmly enough for the patient to be discharged from hospital, after which some fractures went on to complete union, some to malunion, and others to non-union, according to the stage of repair which had been reached in that unduly short period

If this interpretation is in doubt, let us consult the literature of the day when this rapid union was supposed to be occurring—the literature of thirty years ago In 1912 Robert Jones wrote, " Both malunion and non-union are common I see such cases every week We are all misled as to the period of consolidation of bone " Again he wrote " We must realise that the academic period of consolidation authoritatively asserted is not accurate, and that bones which appear firm to the hand will yield after many weeks " A leading article in the *British Medical Journal* thirty years ago reads " The periods of allotted time for consolidation of a long bone after fracture should be revised, that is, lengthened, since yielding at the site of fracture often appears after the case has passed out of the hands of the surgeon "

It must of course be recognised that distraction, loss of blood-supply and infection are important delaying factors It must be recognised that some fractures are much slower in uniting than others (and this also was common experience thirty years ago) But let us accept that complete and continuous immobilisation in plaster neither accelerates nor delays union, it simply allows union to occur at a normal rate without interruption Let us accept that a quickly uniting fracture requires a short period of immobilisation, a slowly uniting fracture a long period, and that every fracture will unite if it is immobilised long enough Let us remember that in deliberately increasing our minimal period of immobilisation from 6 or 8 weeks to 10 or 12 weeks we are accepting the advice of surgeons of thirty years ago, who told us that their periods had been too short Finally, let us remember that the malunion and non-union which they saw every week have now virtually disappeared

Liverpool R WATSON-JONES

SPINAL ANÆSTHESIA FOR CÆSAREAN SECTION

SIR,—May I correct the statement in your annotation of Oct 10 (p 432) that the exact dosage of heavy ' Percaine ' (now called ' Nupercaine ')-was not given in my paper? The exact dosage in every individual case is given in the tables at the end, from which it will be seen that 89 cases were given a dosage of 2 5 c cm This is the dosage I have found most appropriate

In regard to the 8 failures, the cause in some cases was puncture of one of the meningeal veins with consequent blood-stained cerebrospinal fluid, resulting in fixation of the nupercaine solution before it had risen high enough (nupercaine is very rapidly fixed), in other cases (among our earliest) too much time was lost in turning the patient on to her back after injection of the nupercaine, too early fixation again being the result Another possible cause may be that if the Trendelenburg position is not sufficiently attained the solution may fail to pass the lumbar curve, when, of course, the solution does not travel higher than the 1st lumbar vertebra This is a point to remember in the technique of administration for cases of lordosis such as may be met with in patients with rickets or congenital dislocation of the hips The lumbar curve can be partly taken out by making the patient draw her knees up, which we now do as a routine We have had practically no failures in the last 100 cases

Since writing my paper on which your annotation was based, I have done a further 37 cases under heavy nupercaine, with no maternal deaths, the total successful cases now being 158 I am more than ever convinced that heavy nupercaine is the ideal anæsthetic in the properly selected case

Croydon RUFUS C THOMAS

PALSY AND INTRAMUSCULAR SULPHONAMIDE

SIR,—The three cases of peripheral nerve palsy reported by Elkington in your issue of Oct 10 (p 425) prompt me to put on record a similar case which I have encountered The patient was a man of fifty-seven years who had received a number of injections of sulphapyridine for the treatment of pneumonia The last of these injections was given into the back of the thigh and the point of the needle penetrated the sciatic nerve causing sudden pain to shoot down the limb The needle was withdrawn half an inch and the injection continued After a latent period of a few days severe neuralgic pain in the sciatic distribution developed and there was paralysis of the calf muscles, toe flexors and tibialis posticus

After some weeks, during which time the severe pain continued, exploration of the nerve was undertaken The point of damage to the nerve could be detected easily by the presence of local tenderness and slight thickening At operation it was found that the sheath of the nerve was adherent to the surrounding tissues and to the nerve trunk on the medial side The trunk of the nerve was itself inflamed for about a quarter of its width Neurolysis was performed and there was some relief of pain after the operation The present position is that, eight months after the injection the motor weakness is more or less unchanged and there is still complete loss of sensation in the sole of the foot The greater part of the neuralgic pain has disappeared

It is evident that sulphapyridine in concentrated solution can damage nerve tissue permanently Apart from the obvious necessity to avoid the main nerve trunks when giving an injection one wonders how far it is safe in open wounds to use sulphapyridine powder liberally when it is possible that a nerve trunk may be laid bare in the depths of the wound In view of the damaging effect of sulphapyridine on nerve tissue it is clear that the dusting of open wounds with the powder must be rigorously avoided if a nerve trunk is exposed and more especially if partial damage to the nerve by the injury is actually observed

Liverpool NORMAN ROBERTS

PLANNED NUTRITION

SIR,—In your constructive leading article of Oct 3 and the others which have lately urged the formation of a Nutritional Council there is a point which does not seem to have been discussed If a National Nutritional Council does come into being in this country, could not more consideration be given within such a body to the whole directional policy for planned nutrition as it would affect the future of our Crown Colonies?

Parkstone Dorset D G FITZGERALD MOORE

MEDICAL PERIODICALS

SIR,—The maintenance of stocks of periodicals has become a serious problem, publishers' stocks of important journals have been lost by enemy action, scientific libraries at home and abroad have been destroyed and current issues lost in transit The cooperation of all possessors and receivers of periodicals is needed to ensure that important journals are not unobtainable after the war May we ask all private owners of medical periodicals not to consign their collections of back numbers for salvage without the most careful consideration? All librarians will, we know, be pleased to advise inquirers as to the most useful disposal of their unwanted journals

G F HOME,
Librarian Royal Society of Medicine
W R LEFANU,
Librarian, Royal College of Surgeons

SPERM SURVIVAL

SIR,—The article by Tynen and Ranson in your issue of Oct 10 is of value in emphasising the fallaciousness of examining seminal fluid that has been in contact with rubber sheaths I doubt, however, whether transference to glass, or the preliminary treatment of the condom as advised, will eliminate such fallibility, although it would tend to decrease or modify its extent Such errors as are mentioned do not occur when the specimen is obtained completely fresh by the patient himself producing an ejaculation in a room adjoining the examination room. This method has revealed motile spermatozoa in patients who have had several previous reports of non-motile spermatozoa I make a point of allowing the patient to observe the motility of the spermatozoa under the microscope, and it is amazing what tremendous relief and satisfaction this gives to one who is under the impression that he can produce only "dead spermatozoa" Sometimes his whole outlook is changed, and he no longer minds that the number of spermatozoa is few, or that sterility may be associated with this fact For similar reasons, in the absence of complete azoospermia, it is inadvisable to give an absolute opinion on the impossibility of pregnancy After an initial examination of spermatozoa obtained by this method, condom specimens are satisfactory for later estimation of the number of spermatozoa, and the influence of hormone treatment on this number, if any. Incidentally, Charny and Meranze (*Surg Gynec Obstet* April, 1942, p. 836) urge biopsy of testis to exclude those cases in which hormone therapy cannot possibly be of any use

I have never had any complaints, or unfortunate sequelæ, from using this direct method of producing specimens of seminal fluid, but I have heard of one case where the patient blamed the doctor for being the cause

Continued at foot of next column

Obituary

LEONARD KIDD

M D DUBL

DR Leonard Kidd died in his eightieth year at Enniskillen, co Fermanagh, on Oct 2 after a long illness He was one of the best-known surgeons in Ireland, and was on the staff of the Fermanagh county hospital for over forty years Educated at Trinity College, Dublin, and the Carmichael School of Medicine he qualified in 1887, taking the gold medal in operative surgery, and after a term as house-surgeon at the Richmond Hospital in Dublin and as assistant master of the Coombe Hospital, he became, while still a young man surgeon to the county hospital at Enniskillen Here he had sole medical and surgical charge and quickly established a sound reputation as a wise practitioner and a skilful surgeon, and his practice became one of the largest in the Irish provinces Largely owing to his energies the hospital was transformed into a modern, well-planned institution thoroughly fitted for its work as a county hospital Although busy with his professional work Kidd took an important part in public medical affairs and was for many years one of the most active members of the council of the Irish Medical Association, of which body he became president. He also served as president of the Ulster Medical Society In 1906 he contested the office of direct representative of the medical profession of Ireland on the GMC and defeated the sitting member, the late Sir William Thomson Kidd retained his membership of the council until his retirement a few months ago During the last war he served for a time as major RAMC in the 83 (Dublin) General Hospital at Boulogne Leonard Kidd was a magistrate and deputy lieutenant for the county of Fermanagh, and both as a doctor and as a citizen he was held in honour in the county where he worked for so long

[illegible]

LOUIS COLTMAN PARKES

M D LOND, D P H

THE death of Louis Parkes deprives us of one of the most respected men of his age in public health—a man of sound judgment, an alderman among his confreres In his early career he was assistant lecturer to W H. Corfield at University College, London, when he got the bias towards the structural side of public health that was natural in the days when childbed fever and royal attacks of typhoid were attributed to defective drains Typhoid carriers and still less diphtheria carriers had not been thought of nor had the relation of shellfish to the propagation of typhoid been discovered Yet even then one of the qualifications demanded of the typhus nurse was that she had been salted by an attack of the disease It was in this epoch that Parkes succeeded the veteran E C Seaton as medical officer of health for Chelsea, and all that he did there is written in annual reports which can still be read with profit Chelsea was already for the most part a built-up area, and there were slums within it with which he dealt effectively He was closely identified with the Royal Sanitary Institute and the museum which bore the name of his uncle, E A.

Continued from the previous column

of his returning to an adolescent practice which he had only relinquished by dint of great effort One should therefore be aware of this possibility in a neurotic personality I have had no experience of examining a specimen of seminal fluid taken from the vagina or endocervix after coitus but apart from the difficulties involved it cannot give the same information as examination of an uncontaminated specimen of seminal fluid

Harley-street W 1 S L SIMPSON

Parkes, professor of clinical medicine at University College and founder of the science of modern hygiene To the regret of his public health friends Louis Parkes retired somewhat early from official work although he continued to advise H M Office of Works on sanitary matters But he started as a teacher of hygiene and he remained a teacher to the end "Parkes and Kenwood" was the companion and guide of sanitarians for two generations He went from Chelsea to a beautiful house at Holmbury St Mary where he lived with his daughter Joan until his death on Oct 11 at the age of 84

A N

FREDERICK GEORGE CHANDLER

M D CAMB, F R C P

Dr F G Chandler died at Newdigate, Surrey, on Oct 8 Born at Sutton in July 1885, and educated at the Leys School, he became a scholar of Jesus College, Cambridge, and took a first in the natural sciences tripos He qualified in 1911 from St Bart's, where he was house-physician and edited the *Journal* Before going abroad in 1914 he had worked at Ormond Street, Brompton and the London, his war service began as regimental doctor to the 2nd Argyll and Sutherland Highlanders and included charge of field ambulance and CCS On his return he was appointed assistant physician to the London Chest Hospital, where he was senior at the time of his death From 1922 to 1930 he was assistant physician and medical tutor at Charing Cross, then securing election to the staff of his old hospital, which he had meanwhile served as casualty physician He was also consultant to Midhurst and examiner in medicine at both Cambridge and Oxford

Elliott & Fry

Supporting Chandler's candidature for his Bart's appointment a well-known consultant remarked "His knowledge as a physician, his gifts as a teacher his energy as a worker, the staunchness of his character and his friendliness as a colleague would make him a very valuable accession to any hospital staff Less than that could not be said and more need not be said" Another stated that he frequently availed himself of his experience in the solution of difficult medical problems One of those he taught testifies "He was energetic, fiery, stirring and humorous His outpatient afternoons surged along, his ward rounds swept from bed to bed, but at the bedside he became gentle and—for him—leisurely He never frightened a patient, and he was angry if he thought anyone else was going to He often frightened students though, but never to the point of imbecility he would suddenly notice what he was about and rescue them He used to take one or two of us down to Victoria Park to see cases, and rode with us on the bus top, pointing out Georgian terraces going to seed, or Wren churches, and talking hard all the time" And these qualities which we see here in the making became ever purer and more refined in the discipline of successful practice His patients quickly became his friends, as was to be expected when he spared them any sort of physical or mental trauma It was to this end that he devised many instruments and designed the single-puncture thoracoscope with which to perform internal pneumolysis This was perhaps his greatest technical achievement, for in 110 consecutive operations performed without anæsthetic other than an occasional barbiturate only once did a patient become faint on the table All these cases were thus rescued painlessly from the disappointment of a failed artificial pneumothorax, and from the threat of a thoracoplasty And his colleagues also quickly became his friends He had the gift of calling out the best in a man, and his house-physicians were always prepared to give him their spare time without complaint He required extra notes on his cases for his own personal records and evenings were gladly spent in doing them to his satisfaction He was never afraid to ask the advice of a junior nor to consult a textbook if he was asked a question he could not answer, he never attempted to bluff his students—a point they sometimes failed to recognise Many a young consultant he helped through the lean years, when he gave advice he invariably supported it by making it a practical proposition

All through his working years Chandler wrote much for the professional journals He had no call to systematic writing and his papers embodied cross-sections of his thought of the moment His exigence about the form of their presentation was a fearful joy to the willing editor For two *Lancet* series he wrote little masterpieces treatment of bronchiectasis (1930) and its prognosis (1934) He had a flair for diagrams which told at a glance the findings of clinical examination and he taught students to embellish their notes with these graphic formulæ

Although essentially a general physician it was probably in the London Chest Hospital that Chandler found his spiritual home He came on the scene at the moment when X rays and surgery were beginning to revolutionise the practice of thoracic medicine, and he picked up the work at the point where Clive Riviere left it Both were artists and craftsmen, they were close friends and their outlook was very similar Committee work was not congenial to Chandler, but when severe bombing thrust on the hospital the problem of reconstruction he sacrificed his leisure and some sleep to thinking well ahead about the new problem of the private patient in the voluntary hospital

Chandler married Marjorie, daughter of Frederick Raimes, J P, of co. Durham, and they had three children, one boy and two girls It was his set purpose that they should all have some outdoor hobby and he bought a small estate of meadow and woodland in one of the most beautiful parts of Surrey transforming it with his own hands from virgin forest into garden At Newdigate he satisfied his love of growing things and entertained a succession of housemen from Bart's and Victoria Park Here, too, he faced his death sentence with the fortitude he had inspired in his patients He ordered his affairs, directed his household, and planned his garden, regretting only that he should not see it reach maturity He was not afraid of pain himself but hoped that it would not become unbearable

Happily it was an essential part of Chandler's character that he should gather round him those who follow on in his tradition and high principles Generosity and greatheartedness were inherent in him and those who worked with him will not forget his enthusiasm and intensity The memorial service at St. Bartholomew the Less on Oct 16 made this clear enough

DOUGLAS ARNOLD NEWBERY

M R C S, SURGEON COMMANDER R N

Douglas Newbery was born at Bath in 1902 and was educated at Weymouth College He had a great love of ships and when his father, the Rev L A McC Newbery, demurred to his going into the Navy, he determined to become a doctor and to enter the service that way At Guy's Hospital, where he began his medical training in 1919, he lived under spartan conditions, for his father's family was large and money was scarce He joined HMS *Keppel* in 1926, the year he qualified, and after various appointments at home and abroad, including two years attached to Gibraltar dockyard, he was appointed to the RN Hospital at Haslar as anæsthetist But he soon longed for the sea again and joined HMS *Sussex* in 1937 as PMO He was transferred to HMS *Repulse* in 1940 He was reported missing when she was lost last December and is now officially presumed dead

Laf

Though Newbery always regretted he was not executive officer, he was keenly interested in medicine and took every opportunity to widen his knowledge He was reliable and thorough and his independent was never satisfied with readymade opinions stood out for his absolute integrity and for his love of all that is best in music poetry and books He was a good allround athlete and a keen golfer During this war Newbery saw service from Arctic waters to Cape Horn and from Canada to Singapore, always hoping for action When the final action came one of his assistant doctors wrote "The medical arrangements that Newbery had planned worked well in practice, as like most things he did, they were well thought out" He was last seen in the sick bay, helping the wounded men who could be moved to get away to safety In 1932 he married Janet, daughter of Colonel and the Hon Mrs Bernard James, and leaves a son and two daughters

DOUGLAS YEOMAN RICHARDSON

MRCS, DLO, MAJOR RAMC

Major Douglas Richardson whose death on active service at the age of 30 is announced, was educated at Durham School and University He took the conjoint qualification in 1931 and after holding appointments at the West Herts, the West London and the Central London Throat hospitals he settled in Lincoln in 1931 where he took up a partnership in a general practice But his main interest was always in ear, nose and throat work and in 1939 he secured the DLO His consulting work quickly increased and he was appointed to the ENT department at Lincoln county hospital and became aural surgeon to the EMS hospital at Louth When he joined the RAMC it was to continue his special work in a military hospital

Richardson was a keen sportsman and till shortly before the war played rugby with the Lincoln club He was equally good at tennis and golf His patients and colleagues alike appreciated his conscientiousness, sincerity and charm and gave him their affection and trust He leaves his widow with four children

MARTIN DUNSMORE WINNING

MB GLASG, CAPTAIN RAMC

Captain Martin Winning son of the late Dr Thomas Winning of Sunderland, was killed in March by a sniper's bullet while attending casualties during the fighting in Rangoon A former pupil of Durham Boys School, he graduated from the University of Glasgow in 1938 After qualifying, he was house-surgeon in Whitehaven Infirmary and later assistant in a busy general practice in Darvel, Ayrshire He was commissioned in February, 1940, and soon afterwards was posted to India Winning's chief interest in life was medicine, and his patients and friends will recall how often his quiet confidence helped them He was 30 years of age and unmarried

SAMUEL GUISE GUISE-MOORES

KCB, KCVO, CMG MRCS

MAJOR GENERAL RAMC (RETD)

THROUGH the death of Sir Guise Guise-Moores on Oct 3 the Army Medical Service has lost a distinguished veteran and Cheltenham College, where he was educated, a good friend His real ability was backed by charm of manner and a fine presence, and his work well earned the many honours which he received Guise-Moores qualified from St Thomas's in 1888, obtaining his commission two years later, and first saw service in the Chitral campaign During the South African war his quality as an administrator was quickly recognised and his majority came to him as special promotion For the next eight years he was attached to the Scots Guards as surgeon major, but he returned to the RAMC in 1909 and was promoted lieut-colonel three years later During the whole of the last war he served at the front and was five times mentioned in dispatches, created CB and CMG and officer of the ordre Leopold In 1919 he was made major-general—again a special promotion—and in the same year he was appointed commandant of the RAM College and later DDMS of the Aldershot command Shortly after his retirement in 1923 he became house governor and medical superintendent of the convalescent home for officers at Osborne and he was a successful DMS at the Empire Exhibition at Wembley He married Miss Kate Louise Wood and they had one son He was 70 years of age

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Notes and News

SIÈCLE MEDICAL

THE Metropolitan Edition of the *Siecle Medical* is published in Paris and has an office in the unoccupied zone at Vichy *It retains the format of a daily newspaper* costs two francs and is issued monthly "provisionally" It claims the largest circulation among medical papers in France and includes "the latest medical news from the whole world"—the second claim being hardly borne out by the contents which are largely concerned with "parochial" medico-politics Indeed, in a recent issue almost the only reference to medicine outside France is a notice of an article in *Wehrmacht*—the German military paper—which describes, in lyric though hardly scientific terms, an operation "as dangerous for the operator as for the patient" An anti-aircraft gunner was brought to the divisional dressing station with an unexploded 2 cm explosive bullet lodged in the left scapular region X-ray examination showed it to be in the dorsal muscles at the level of the sixth rib The surgeon "considerably worried at this unusual case," was not reassured by receiving information on the extreme sensitiveness of the exploding mechanism All the usual assistants were turned out of the operating theatre except two male nurses, the patient was covered with steel plates except for the field of operation, and the surgeon and assistants donned sterile gowns and steel helmets "Puis l'opération commence, angoissante, passionnante et delicate" The missile was exposed, withdrawn "by a gentle and prudent movement of the forceps" and removed by an assistant "with measured gestures" It is needless to add that the operation was crowned with success The other main articles on the first page consist of a reproduction of a broadcast speech by Dr Grasset, the secretary of state for health and the family, announcing the reorganisation of the profession and the formation of a Medical Corporation, an article on social medicine, which is defined as synonymous with preventive medicine, and the celebration of the fiftieth anniversary of the School of Anthropology in Paris Other articles deal with the non-medical treatment of enuresis, as set out by Professor Czerny in the *Deutsche Medizinische Wochenschrift*, the effects of eating poisonous fungi, which perhaps throws a sinister light on the food shortage, the difficulties in sterilising instruments which will be caused by the proposed restrictions on gas, a resolution of a departmental council of the Medical Order demanding restrictions in the number of medical students, and a decree setting up a system of preventive medicine for students at the University of Paris A whole page is given up to local medical news and another to answers to correspondents, all of which are concerned with conditions of practice &c and not with technical subjects The last of the eight pages is headed "Le Siecle Dentaire," and the small advertisements are largely of consulting-rooms to let ! From all of which it is clear that our colleagues in France have even more worries and troubles to face than the rest of the French population

University of Cambridge

At recent examinations the following were successful

DMRE

Part II—R A D J Bernhardt A B Donald H R Holmes Benzion Kounine Arnost Preiss R A Williams, and Hugh Wormald

On Oct 16 the following degrees were conferred by proxy

MB, B Chir—[illegible] Emrys Roberts, A J Rook, W F Felton Maurice Koettlitz, J B [illegible]-Mein, I N Darbyshire M M Brown, K H Lum, W P U Jackson and R J F H Pinsent

MB—John Mackellar

Medical College
83
LANCET

University of Sheffield

Dr H Le Brun and Dr W A Harney have been appointed demonstrators in anatomy

At recent examinations the following were successful

FINAL EXAMINATION M B, CH B

Parts II and III—H M A Ansari, Josephine Hall, J D H Linfoot, E R Monypenny, Ethel M Spedding, R L N Stewart and Joan Williams

Dysentery in Middlesbrough

Since Sept 10, 92 cases of Flexner W dysentery have occurred in Middlesbrough The disease was first confirmed bacteriologically on Sept 16, although for some weeks previously there had been cases of severe diarrhœa in the town which were ascribed to the consumption of raw fruit Most of the cases of dysentery were in children under five years, although some adolescents and a few adults were affected There have been 9 deaths, 8 in children under four years and one in a woman of fifty, these were toxic cases and except in the woman occurred in poorly nourished infants who were quickly dehydrated and did not respond to sulphaguanidine and the usual restorative measures Clinically, the cases were typical with a rise in temperature to 100°–102° F for several days with blood and mucus in the stool

All confirmed cases were admitted to the isolation hospital and some 250 other cases of diarrhœa were investigated bacteriologically The usual routine investigations were made but no common source of infection was found Samples of water, milk and ice-cream were examined with negative results It was obvious that spread was occurring from patient to patient, since in many instances several members of one family were affected Isolation of all cases in hospital resulted in the localisation of the infection and the prevention of further spread During the week ending Oct 17, only 7 positive cases have been admitted to hospital The outbreak seems to have been initiated by a small nucleus of infection occurring some time during July

Smallpox in Fife

Twenty one cases of smallpox have been reported from Fife this month Five families from Methilhill were involved in the first cases a mother and her four year old daughter, both of whom have since died, were admitted to hospital on Oct 7, a father, mother, six year old son and five year old daughter, a husband and wife, a young woman, and a six-year old girl the following day Eleven further cases, all contacts of the earlier ones, have been confirmed It is yet too early to say where the outbreak originated or what connexion, if any, it had with the Glasgow epidemic The cases were at first thought to be chickenpox and in view of this the Department of Health for Scotland have asked medical practitioners to report all doubtful cases to their local medical officer of health

Medical Casualties

The following casualties have been announced

Missing, presumed killed—T/Surgeon Lieutenant W W Tennant, MB GLASG, RNVR, HM Minesweeper *Leda*

Missing—T/Surgeon Lieutenant B H O'Neill, MRCS, RNVR, HMS *Sikh*

Wounded—Captain N J P Hewlings, MB CAMB, RAMC, WS/Captain T A Shannon, MRCS, RAMC

Medical Honours

The DSC has been awarded to T/Surgeon Lieutenant A W Clark, MD, RCNVR, for bravery, endurance and devotion to duty in action against the enemy in the Mediterranean, and to T/Surgeon Lieutenant Gillies Macbain, LMSSA, RNVR, for courage and devotion to duty in north Russian waters

King Edward's Hospital Fund

The King has appointed the Duke of Gloucester president of the fund in succession to the late Duke of Kent During 1941 the fund distributed £300,000 among the London voluntary hospitals and a further £2000 for district nursing work among outpatients The fund has also collaborated with the Ministry of Health in the survey of London's voluntary hospitals The recruitment centre has secured 1100 student nurses for the hospitals A contributory schemes committee has been set up—consisting of representatives from King Edward's Fund, the Voluntary Hospitals Committee, the Hospital Saving Association and the Hospital Saturday Fund—to consider the coördination of contributory schemes in London

Royal Society of Medicine

On Monday, Oct 26, at 2 30 PM, Mr B Maxwell Stephens will give his presidential address to the section of odontology He will speak on inferior protrusion and the advisability of early treatment and there will be a discussion afterwards On Oct 27, at 5 PM, at a joint meeting of the sections of medicine and epidemiology, Dr R C Wingfield, Dr Cyril Banks, Wing Commander R R Trail and Dr J B McDougall will open a discussion on the control of tuberculosis as an infectious disease

Medical Society of London

A general meeting of this society will be held at 11, Chandos Street, W1, on Monday, Oct 26, at 5 PM, and at 5 15 PM, Dr A Hope Gosse will give his presidential address on the health of the doctor

Eggs for Nursing Mothers

Mothers are to be allowed priority supplies of eggs for twelve months after the birth of a child, and in future it will only be necessary for doctors to issue an initial medical certificate to a nursing mother on the birth of the child

Photography in Industry and Science

The exhibition arranged by the Association of Scientific Workers will open on Oct 31

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

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Appointments

ROSE, LOUIS, MRCS consulting neuropsychiatrist to the Lowestoft and North Suffolk Hospital

CHEFTINS, E M, MB LOND resident asst medical registrar at the Royal Free Hospital, London

*MCLAUCHLAN, J A, MD EDIN, FRCS orthopædic surgeon to Queen Mary's Hospital for the East End

*IBBOTSON, WILLIAM, FRCSE aural surgeon to Queen Mary's Hospital for the East End

* War time appointment

Colonial Service—The following appointments are announced

MACDONALD, R F, MD ABERD, DPH MO, Gold Coast,
CRAN, D L, MB MANC, DTM & H MO, Zanzibar,
MACLENNAN, N M, MD ABERD, DPH, DTM & H DMS, Trinidad,
WILSON, C, MB DUBL senior MO, Nigeria,
SIMON, D S LRCPE medical superintendent, Hendala Leprosy Hospital, Ceylon

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Births, Marriages and Deaths

BIRTHS

BISSET—On Oct 9, at Perth, the wife of Captain G M Fraser Bisset RAMC—a son

BOWE—On Oct 14, at Dorking, the wife of Squadron Leader J C Bowe, MB, RAF—a son

CRAIKE—On Oct 10, at Ealing, the wife of Dr W H Craike, RAFVR—a son

FLINT—On Oct 11, in London, the wife of Dr H T Flint, Pillerton Hersey, Warwick—a daughter

GLADSTONE—On Oct 10, in London, the wife of Dr Gerald Gladstone—a daughter

HEWER—On Oct 12, the wife of Prof T F Hewer, MD—a daughter

MOLE—On Oct 15, at Tiverton, Devon, the wife of Lieutenant R H B Mole RAMC—a son

NASH—On Oct 10 at Cheltenham, the wife of Squadron Leader D Ellison Nash, FRCS—a son

ROBERTS—On Oct 11, at Bristol, the wife of T/Surgeon Lieutenant J A Fraser Roberts, RNVR—a daughter

STORRS—On Oct 14, the wife of Mr Guy Storrs, FRCS, of Bedford—a son

VAUGHAN JACKSON—On Oct 16, in London, the wife of Surgeon Lieut Commander O J Vaughan Jackson—a son

MARRIAGES

DISMORR—ROBERTSON—On Oct 13, at Frognal, Edward Stewart Dismorr, MB, to Betty Robertson

KENNETT—CRAIG—On Oct 13, at Edinburgh, Alexander Kennett MRCS, surgeon lieutenant, RNVR, to Alison, younger daughter of the late Sir Maurice Craig, FRCP

MERSON—HOUGHTON—On Oct 9, at Zanzibar, George Polson Merson, MB, to Norah Houghton

DEATHS

BRAZIER CREAGH—On Oct 10, George Washington Brazier Creagh CB, CMG, LMS, RAMC (retd) aged 84

BROOKS—On Oct 14, at Swanage, Walter Tyrrell Brooks MA OXFD, MB LOND

PARKES—On Oct 11, at Holmbury St Mary, Louis Coltman Parkes, MD LOND, aged 84

RODOCANACHI—On Oct 13, at Stalybridge Cheshire, Ambrose John Rodocanachi, MD LOND, FRCS, aged 68

SOME AIDS TO OPERATIVE SURGERY

W A COCHRANE, M B EDIN, F R C S E
SURGEON IN CHARGE, PRINCESS MARGARET ROSE HOSPITAL EDINBURGH, LECTURER IN ORTHOPÆDIC SURGERY TO THE UNIVERSITY OF EDINBURGH

METHODS of using a knife in operative surgery receive little attention in textbooks or discussion It is not surprising that those who are expert operators should take the matter for granted, but, for those who are beginning surgery, it should be of use to consider how this instrument, so fundamental in importance, may be used to the best advantage It is necessary to know not only what should be done at an operation, but also, how it should be done technically Watching, or even assisting at, operations does not readily bring out all that is required by the surgeon when he begins to operate for himself

POSITION OF THE PART

The operation should not begin until the part has been put into the best position, in order, when possible, to put the tissues under the moderate tension required for clean knife dissection, and to carry them forward into the field as the dissection proceeds Many potential difficulties of an operation need never arise, if the surgeon gives this special attention Veins give the chief trouble in many operations, if they are put moderately on the stretch, they do not get engorged and give a minimum of interference For example, in operations at the root and in the deep triangles of the neck, the head and shoulders are raised on sandbags and the head turned to one side, with the shoulder depressed by the pull of a clove-hitch round the wrist In operations on the upper limb and axilla it is often of assistance to abduct the arm on a narrow table, placing a sandbag beneath the elbow It may add seriously to the dangers of an operation if the dissection is allowed to proceed on slack tissues Work in the dissecting-room affords little indication of the manner in which the resilience of the living tissues can be utilised in surgery

THE KNIFE AND THE INCISION

The shape, weight and balance of the knife should be studied The blade should be fairly broad, bulging to a belly near the point The point should be far back, in line with the back of the blade If the blade is too narrow, and if its back and cutting edge slope equally towards the point, it adds to the difficulty of knife dissection, which ought to be done with the belly and not with the point If the knife is wrongly shaped, badly balanced and held wrongly, it becomes all the more difficult to avoid the puncture and division of important structures The student's dissecting knife is not always well-shaped and balanced, and some of the blades and knives in common use at operation are poorly designed

The incision should be long enough The handle is held low The belly of the knife is pressed against the skin, made tense by the pressure and separation of the index finger and thumb of the left hand which over-arch the blade and accompany it on its course The left hand dominates the right in making the incision and a clean cut down to and through the subcutaneous tissues The underlying structures are exposed and rise into the wound Sometimes the tips of the index fingers, covered with gauze, are put into the wound at this stage and firmly but gently separated, to give additional exposure of fascia and aponeurosis In an operation for inguinal hernia, for example, this assists in exposing the external oblique aponeurosis, the cord and the external abdominal ring

THE DISSECTION

The rest of the dissection is not made by cutting straight through the tissues The belly of the knife is used on the slant, sloped or keeled over a little on its side In this position, it is drawn along and very slightly across the line of cut, almost in a stropping fashion The blade must be very sharp If the knife is used in this manner, the tissues rise into the wound and the operator has a fraction of a second to see and avoid important structures, because they roll up into view under the sloping blade, just before they stand in danger of being divided The time afforded is sufficient for the pressure of the knife to be momentarily released It passes on its way, leaving the structure exposed and undamaged, or sinking back safely If one's knowledge of anatomical detail is sound, the pressure on the blade is actually being eased as it approaches an important structure This is an additional safeguard, supplemented often by recognition of a deep guide, such as the sternomastoid branch of the occipital artery when approaching the spinal accessory nerve in the neck Again, in making a longitudinal incision across the bend of the elbow, the easing-up of pressure on the knife at the sites of the superficial veins prevents their division as they come up into view under the sloping and slight angling of the blade

Rightly employed, the knife is a knife and dissector in one, the safest of instruments and one which does the least damage to the tissues Merely to incise tissues is not to dissect them To cut them apart and display them to view requires that the instrument must be used in a particular manner With practice, the blade may be tilted over to one side or the other, as may be convenient, in alternate pronation and supination of the surgeon's forearm and in an upward or downward direction The point of the knife is not to be used In freeing the tonsillar lymph-node, for example, it is unsafe, as the deeper part of the dissection is reached, to complete the final separation by a scissors cut, if this is done, the thin-walled jugular and common facial veins are kinked and cut Nor is it safe, at this stage, to use blunt dissection for this purpose The correct procedure is to continue with the knife dissection to the very end, keeping the edge against the gland In the final stages of a dissection especially, blunt and blind methods should be avoided Trouble is not unusual in the very moment of completing operations for these reasons, and sometimes because the operator fails to leave off when the real purpose of the operation has been completed

If the parts have been disturbed by trauma or by scar, normal anatomy above and below the lesion should be exposed first, so that the operator can proceed from the normal to the abnormal Important structures in the vicinity should be deliberately exposed and gently retracted before going on It is a safe rule in surgery to expose what one wishes to protect In a fractured humerus, the radial nerve is sought and retracted before dealing with the fracture In the case of the peripheral spinal nerves, it is necessary to know the sites of origin of the branches and from which side of the nerve they arise, so that the knife may free the trunk by mobilising first the side of the nerve from which they do not arise For example, in the case of the median nerve at and below the elbow, all the branches save one arise high up in the forearm, mainly on the posteromedial side of the main trunk If, therefore, the knife is passed up along this side of the nerve all these branches will be severed at a stroke The same remarks apply to the blood-vessels Like the nerves, they are best freed mainly from above downwards and on the appropriate side To facilitate dissection, toothed forceps of comfortable spring should be held in the left hand In the more difficult limb dissections, three assistants are best, one to act as first assistant, the second to retract, and the third to hold and steady the limb

If reliance is placed on a good knife, used correctly, there should be no great need to resort to blunt dissection in the surgery of the neck and limbs If used to excess it prolongs the operation needlessly and predisposes to shock Inadequate incisions, scratchy work with the point of the knife, and heavy retraction all devitalise the tissues and predispose to infection, hæmatomata, œdema and pain A rigid non-touch technique may contribute to the undue length of an operation Unhurried speed, especially in war surgery, is of great importance, as are gentleness and sound judgment in not attempting too much at one sitting The best treatment of postoperative shock is prevention This applies particularly to children I have known a spinal bone-graft take nearly 3 hours to perform, with fatal results to the patient It should take 40–60 minutes

BONE WORK

In open reduction of fractures the difficulty often lies not in the actual reduction but in maintaining it until a reliable means of retention has been applied To avoid rigid internal fixation in a fracture of the shaft of the humerus, for example, two narrow strips of aluminium or other metal, about 2 in. broad by 10 in. long, are sterilised, as soon as the fracture has been reduced, and perhaps sutured by a stitch of catgut or kangaroo tendon, the metal strips are padded with sterile gauze. They are bandaged lightly but firmly, with a sterile bandage, to the posterior and medial aspects of the upper arm, leaving the wound uncovered. Their efficiency is tested while the fracture is still visible. The wound is closed and the limb and splints put up in a plaster spica. I am indebted to the late Mr. Naughton Dunn for this advice, and have employed it satisfactorily since. If one of the fragments is difficult to control, it may be steadied by the insertion of a pin, which is incorporated in the plaster.

In using an osteotome, gouge or chisel, the tap of the mallet is to be taken up and resisted by the grip of the hand holding the instrument, lest it should suddenly penetrate too deeply. The tap of the mallet and the shock-absorbing, buffer-like opposition offered by the other hand must be so coordinated that the instrument is not only checked but also made to recoil. It must not be allowed to travel on unchecked after the effect of the tap has been achieved. The markings on Macewen's osteotome are an additional safeguard. In cutting away bone on a sloping or curved surface the instrument must be laid accurately, so as to follow the camber with precision. This prevents the instrument, struck and controlled as above, *from slipping off and injuring other* structures. These rules should be strictly observed, they are essential for safety in difficult situations. In performing osteotomy, additional protection is given by the insertion of a curved bone elevator passed round the bone subperiosteally, opposite the site of the proposed division. It is of service, also, to make a series of drill-holes, ½ in. apart, through the bone, in the line chosen for the osteotomy. Only relatively light taps of the mallet are then required and the chances of splintering or of fracturing the bone in the wrong place greatly lessened, if the bone is abnormal at the site of division this is particularly important. Instead of a linear osteotomy it is often best to perform it in the form of a V, upright or inverted, because more accurate control of the position can thus be assured. In some instances this method can obviate the use of a plate—for example, in derotational osteotomy for the relief of congenital dislocation of the hip. It is useful, too, in the correction of a malunited fracture, because correction in both planes and of rotation may thus be obtained. If there is doubt whether position can be controlled after osteotomy, drill-holes for the passage of a suture should first be made on either side of the site for division of the bone. This applies in section of the clavicle in an extensive brachial plexus dissection.

WOUND CLOSURE

In stitching up wounds of the limbs, subcutaneous suturing is not often necessary. The interrupted skin sutures, put in *not too near one another, include the* deep fascia and subcutaneous tissues. This diminishes the likelihood of infection and helps to prevent œdema, tension and pain, because it allows of drainage between the stitches. If the wound is to be kept covered for long beneath a plaster casing, it is advantageous to apply bipp to the closed incision and skin round it. Bipp is a good sentinel antiseptic and prevents maceration of the skin from discharges. In closing wounds in which there is tension, the stitches should begin at the ends. To prevent cutting out of the stitches, they may be first threaded through 1 in. strips of fine rubber tubing. If one of the flaps is short and relatively fixed, it is a good plan to swing up the more redundant flap to the best position for covering the area. An incision is then made at a right angle into the fixed flap at this point, so lengthening it. This is especially useful in closing the wound after radical excision of the breast and avoids the need for skin-grafting. Opinions vary as to the use of tourniquets. I often use a tourniquet in operations on the lower limb, but prefer not to use it on the upper limb as a rule. If it is employed in the upper limb, a broad Martin's bandage applied over a towel is safe, but it should be discarded in a few minutes, once the operation has got under way.

I am indebted to Sir Harold Stiles for most of the points, I learnt them as his assistant.

POSTVACCINAL ERUPTIONS

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TOWARDS the end of May, 1942, a previously unrecognised case of oriental smallpox arrived in Glasgow on board ship and was removed to hospital. There ensued in and around Glasgow during the following two months 9 cases directly connected with the ship, 20 shore cases apparently unconnected with the ship or with each other and 4 cases secondary to this latter group. Two of the ship cases and 6 of the others died. Wide measures of surveillance and vaccination of contacts had been practised from the outset. In addition, a mass vaccination campaign was launched at the end of June comprising the establishment of 25 public vaccination stations and the regular issue on a large scale of lymph to medical practitioners. Thanks to the enlightened response of the public and to the cooperation of doctors and the press, about half a million vaccinations were performed during July.

As one result a large number of regional or generalised vaccination rashes appeared among both children and adults. There was evidence that many cases, where the eruption was sparse or fleeting or the degree of illness negligible, must have eluded medical observation. In several other instances patients consulted a doctor but were not referred for further medical review. Records are available, however, of 123 regional or generalised postvaccinal eruptions examined at the invitation of doctors in the city by the central medical staff of the Public Health Department. The cases so examined are regarded as forming a substantial proportion of the probable total number of the more extensive, severe or clinically perplexing cases. An analysis of the records now seems desirable because the cases included a death and also because of the difficulties raised in diagnosis and administration.

ANALYSIS OF CASES

Clinical classification.—The clinical appearances of the eruptions, and numbers of cases showing them, were as follows:

Papular	
Papules	5
Maculopapules	2
Urticarial and erythematous	
Papular urticaria	37
Erythema multiforme	20
Morbilliform erythema	16
Scarlatiniform erythema	6
Roseola	5
Urticaria	5
Erythema iris	4
Nummular erythema	2
Erythema	2
Red urticaria	1
Purpuric	
Petechiæ	2
Pustular	
Bullous impetigo	9
Folliculitis	4
Pustular erythema	1
Exfoliative dermatitis	1
Eczematoid	
Papular eczema	1

The names are in some instances rather arbitrary and not rigidly definable but each will convey a range of appearances. Combining ætiological with clinical classification, Stelwagon (1916) grouped the urticarial or erythematous and the purpuric rashes together as due to pure vaccine inoculation, and impetigo and furunculosis as due to mixed inoculation introduced at the time of vaccination or subsequently. He also recorded cases of pemphigus, a few serious, but placed the pemphigoid eruptions in a group of sequelæ of vaccination. His list of sequelæ included also eczema, urticaria and furunculosis. The list above shows most of our cases in the toxic group, 2 of them purpuric, and 15 in the infective group when the fatal exfoliative case is included. Impetigo was present in this case. There was also other evidence of infection by staphylococci, and infantile exfoliative dermatitis, like acute pemphigus, has been regarded in some cases as a variant of impetigo contagiosa. One eruption fell by reason of its interval into the category of late sequelæ—the papular eczema which erupted 7 weeks after vaccination, to which, however, it was clearly related; and there was one reported recurrence of papular urticaria.

Vaccinal state.—All the cases had been positively vaccinated and nearly all showed a well-marked local reaction. Only 22 persons had been successfully vaccinated *previously*. This small proportion contrasts with the percentage of Glasgow births annually vaccinated. The M.O.H. annual report for 1938, p. 84, reported that this figure has remained at 40% or over. It ears despite its having fallen by half since the beginning f the century All the cases were successfully vaccin-ted on the present occasion at the first attempt although t was alleged that 0 had failed to take in infancy (includ-ng 1 case unsuccessfully attempted twice in infancy and cases thrice attempted)

Age and sex distribution —The age-distribution was s shown

Age	0–1	1–4	5–9	10–14	15–19	20–29	30–39	40–49	50
Cases	8	23	13	18	8	14	6	2	1

Thus 75% of the cases were under 15 years of age The youngest patient was aged 6 weeks at vaccination, the oldest 50 years Only 12 of the cases were males Females preponderated, though to a lesser extent than among adults, even among the children, numbering 59 of the 92 cases under 15 years

Interval between vaccination and eruption —The number of days between vaccination and the appearance of the regional or generalised eruption was as follows

Days	Cases	Days	Cases	Days	Cases
2	1	8	26	18	1
3	2	9	26	19	2
4	1	10	19	22	1
5	4	11	13	24	2
		12	2		
6	5	13	2	27	1
7	13	17	1	49	1

The interval 7–11 days therefore covered the great majority of the cases Excluding the late sequela case the average interval was 8 4 days for primary vaccinations and 0 2 days for revaccinations One would have expected the shorter interval in the revaccination group since their local reactions mature earlier but the number of our revaccinations is small

DIAGNOSIS

The diagnostic difficulties were at first considerable, but soon both practitioners (who then referred fewer cases for consultation) and departmental officers attained confidence in separating postvaccinal eruptions from variola Except pruritus, symptoms were of little help because they could be ascribed to the positive vaccination. The chief grounds for excluding variola came to be the regional limitation or grossly asymmetric distribution, a report or evidence of itching, and the character of the lesions themselves

Several punctate, morbilliform and diffuse *erythemata* were restricted to the trunk or part of the trunk, others to the legs, to the arms and legs or to the forearms and legs, only a few were generalised In the *roseola* cases the lesions were discrete and centrifugal but included some irregularly shaped patches and were flat and fugacious One of the many profuse cases of *erythema multiforme*, an adult who remained off work for a month, had numerous facial and even a few palatal lesions, but the skin lesions as in all the cases so classified were pleomorphic *Nummular erythema* is described by Ricketts and Byles (1908) in their differential diagnosis of variola, one of the present cases had chiefly a long glove distribution, in the later case the trunk was also affected The boy with *red urticaria* was severely ill and displayed meningismus, but his extensive eruption lacked particulate elements *Impetigo bullosa* involved the vaccinated arm but in each case only one or two other regions, the individual lesions suggested vaccinia rather than variola, and there was usually a typical impetiginous scab somewhere In the *folliculitis* group the vesicopustules and pustules, which seemed related to hair follicles but fell short of furunculosis, were small, rapidly evolving and scanty though widely dispersed In the *pustular erythema* case the pustules were irregularly shaped, of various sizes, thin walled and very superficial

The present series is notable for the number of cases of *papular urticaria* Frequently this was centrifugal, favoured the extensor surfaces of the limbs and showed in its early stages pink areolæ round the pinhead sized papules, some of which, too, showed crusting or suggested vesiculation and even umbilication In all the lichen urticatus cases, however, there was a report or evidence of itching and many showed regional urticarial wheals The less striking discrete *papular* eruptions are of interest because casual observation suggested that many unreported rashes were of this kind, being often recognised as harmless spots or pimples Some were widely distributed but most were scanty Some began to subside within 24 hours, in other cases papules persisted for several days Four of the reported cases were adults The two *maculopapular* rashes were widespread and one child showed a circumvaccinal ring of macules with slight vesiculation of some other lesions, but the general distribution and evolution were not suspicious

Eruptions of the kinds listed above affecting several unvaccinated persons were also reviewed during the same period Papular urticarial rashes were also seen in some children suffering from scarlet fever, chicken-pox or scabies, a few of these children (excluded from this report) had positive vaccinations There were also referred to us a considerable number of other rashes, such as those of chicken pox, measles, acne, scabies, drug eruption, flea-infestation, and sudamina, and, in unvaccinated persons, of staphylococcal dermatitis, syphilis, erythema nodosum and herpes zoster Looking back on the types hardest to diagnose, one can now say that it eventually became less difficult to exclude variola in postvaccinal eruptions than in some cases of early measles or more notably of atypical chicken-pox, despite the probability that in ordinary times even the chicken-pox cases would have raised little doubt Nevertheless there continued to occur postvaccinal cases strongly suspected to be papular urticaria but so simulating early variola that smallpox hospital isolation and observation were preferred to observation, even by more than one medical officer, in the patient's home

ADMINISTRATION

Six cases—erythema iris 4, red urticaria 1, folliculitis 1—were sent to a fever hospital on account of the degree of illness In the girl with folliculitis its appearance was associated with the onset of petit mal No fewer than 16 cases were removed to the smallpox hospital—papular urticaria 8, urticaria 3, roseola 2, and one each of erythema multiforme, nummular erythema and folliculitis Although these cases were removed to the smallpox hospital full administrative action was usually withheld pending an opinion from the hospital Some eruptions began to fade or abort within 24 hours, others within 2–3 days, while a few persisted longer but declared themselves by the manner of their development Meanwhile only familial contacts were vaccinated and these were not removed to the reception house; and no disinfection was performed Often, however, the neighbours would themselves decide to visit a vaccination station

LYMPH AND VACCINATION TECHNIQUE

Ricketts and Byles attributed generalised erythemata to circulation in the blood-stream of the secondary products of inflammation absorbed from the vaccine pustule, they regarded even the particulate eruptions as toxæmic and not as implying generalisation of the specific virus Chalke (1031) reported 14 eruptions appearing usually on the eleventh day in 14 primarily vaccinated children in a six-months series of 1000 vaccinations In a general review he agreed with Ricketts and Byles that many vaccination rashes are accidental and toxic, but held that others are due to idiosyncrasy and are allied to serum rashes The latter are likewise reported as frequently morbilliform, scarlatiniform, urticarial or erythematous though differing from postvaccinal eruptions in being often associated with special symptoms or with sensitisation by previous injections He could not find evidence pointing to any particular batch of lymph In the present series there was no incrimination of any particular lymph establishment or batch, for several batches of Government and of various commercial lymphs had been used for the cases

The Ministry of Health Committee on Vaccination (1928, pp 260, 291) reported that strapping used in dressing the wound was responsible for the unilateral scarlatiniform or urticarial eruptions encountered 2–8 days after vaccination in nearly 74% of a group of men, although apart from this group they also reported eruptions in men on the ninth and tenth days (papulovesicular, erythematous, purpuric and a serum type) In the present series unilateral eruptions were few As regards the amount of scarification, many vaccinators and doubtless many methods were involved, but in a great number of cases the scarification was of the moderate extent officially prescribed for the vaccination stations—three strokes ⅜ in. long and ⅛ in. apart Although in almost all our cases the local reaction was well-marked, severe reactions due to extensive scarification were noted only in 2 cases of morbilliform erythema, 2 of punctate erythema, 1 of papular urticaria, 1 of erythema multiforme and also in most of the cases of impetigo bullosa In one of the punctate cases the rash appeared 22 days after the vaccination which was still very septic, there was circumoral pallor (a feature also of several of the papular urticarial cases) and the case was very like scarlatina except that the throat was practically normal in appearance

CLEANLINESS FAMILIAL INCIDENCE PRE-EXISTING SKIN DISEASE

Many of the houses in which our cases occurred, including some of the infective group, were quite clean Although most or all of the familial contacts of our cases had also been vaccinated, in only two families did an eruption affect more than one member—one family yielded a maculopapular eruption and a younger case of erythema multiforme while in another family a case of papular urticaria was associated with an infantile morbilliform erythema The hospitalised case of nummular erythema—a direct contact of smallpox—was the elder sister of a boy aged 6 who sickened of mild encephalitis 14 days after positive primary vaccination or 11 days after a positive revaccination

Pre-existing skin disease was rarely found or alleged, in a few cases previous attacks of heat spots or " hives " were alleged Conversely, in one adult case of papular urticaria removed as suspected variola and retained for 24 days the eruption recurred the day after dismissal

NOTABLE ERUPTIONS

Petechial group —The two patients were aged 6 and 10 years and the eruptions appeared 8 and 9 days respectively after vaccination The spots were on the trunk One of the children was sharply ill with fever and headache

Pustular group —Excluding the exfoliative case, the ages of these cases ranged from 8 months to 30 years, and the intervals from 7 to 11 days except in one case of impetigo bullosa appearing 24 days after vaccination. Impetigo bullosa was the class of postvaccinal eruption in which the clinical diagnosis of generalised vaccinia demanded the closest consideration, owing to the similarity of the lesions to a vaccine pustule and to the presence in most of the cases of a cluster of the bullæ round the vaccination pustule However, it was preferred to regard these cases, as Stelwagon regarded such cases, as probably impetigo because the distribution was regional (the vaccinated arm and in every case one or two other regions such as another limb, the face or an area on the trunk), because most of the cases also showed impetiginous scabbing, and because the bullæ were often at an earlier stage of development than the vaccination pustule This last feature was most obvious in the case occurring 24 days after the vaccination which had then almost healed, and furnishes an argument also against a diagnosis of multiple auto-inoculations Auto-inoculations were often diagnosed in Glasgow but the pustules were either single or very few

Generalised vaccinia —Although many eruptions remained unreported in Glasgow, the circumstances were on the whole very favourable for reporting Even when allowance is made for these favourable circumstances, the incidence of non-specific postvaccinal eruptions is found to be much greater than that recorded in various countries for generalised vaccinia—namely, one case of generalised vaccinia in about every 10,000, 20,000, 100,000 or even a million vaccinations It is noteworthy nevertheless that no Glasgow vaccination rash was regarded as generalised vaccinia

Chalke goes so far as to say that it is probably always due to auto-inoculations He adds that the number and situation of the secondary lesions will depend on the number and site of the auto-inoculations, and that clues to the diagnosis will be provided by the absence of personal cleanliness and in some cases by the presence of an old skin eruption or of recent septic wounds Van Rooyen and Rhodes (1940) likewise conclude that the majority of generalised vaccinal eruptions are due to accidental infection caused by auto-inoculations and also note the occurrence of generalised vaccinia on areas of burns and dermatitis The subjects of clinical descriptions of hæmatogenous generalised vaccinia have doubtless occasionally been varioloid, which in any event it is impossible to exclude clinically

Therefore in figures however small of generalised vaccinia there arise possibilities of confusion, partly owing to the inclusion of non-specific vaccination rashes and of varioloid, partly because recognised cases of multiple auto-inoculation may or may not be included and also because multiple auto-inoculations can be simulated by impetigo bullosa Throughout the imported Glasgow smallpox outbreak and the consequent vaccination campaign the cases most strongly suggesting true generalised vaccinia on the first examination were 4 of the ship's crew erupting 9–13 days after well-marked primary vaccination and one previously well-vaccinated passenger erupting 11 days after successful vaccination These cases were admitted to the smallpox hospital where the duration and degree of illness caused them to be regarded as varioloid

Fatal infantile exfoliative dermatitis —A healthy breast-fed infant was vaccinated when aged 8 weeks together with his mother and a brother at a vaccination station to which he was not brought back On the tenth day after vaccination he was seen moribund by a department medical officer in a general hospital reception department where the child died On the fifth day he had become irritable, had refused feeds and had vomited On the sixth day his skin was pink and there were a few red spots on his back and buttocks During the next few days he slept better but still refused feeds, and a few red spots appeared on the face Boracic powdering of the vaccine pustule, which reached the size of a shilling, was practised On the evening of the tenth day he began to grunt, roll his eyes up and make constant attempts to vomit, he died three hours later Necropsy was performed next day by Dr T. Anderson, Knightswood Hospital, who reported

> " There were numerous denuded areas on the face measuring 1–3 cm in diameter with raw skin underlying The whole of the left upper arm from the shoulder to the elbow and stretching round to the axilla was completely denuded of skin with what appeared to be a fairly healthy vaccination in the centre The buttocks were inflamed and there was a coarse desquamation of the front of the legs On the back of the legs, however, there had been what appeared to be an exfoliative dermatitis, the whole skin lifting on pressure There was some recent crusting of the back of the scalp which was very suggestive of impetigo The heart, lungs, spleen, liver and kidneys were normal There was no suprarenal hæmorrhage The bowel was empty but otherwise appeared to be normal The skull was opened and the brain appeared to be slightly œdematous but there was no flattening of convolutions nor was there any pressure cone A section of the brain showed a normal appearance "

Dr Anderson further reported after bacteriological investigation·

> " Cultures taken from the site of the vaccinal lesion show a profuse growth of various organisms so that it is impossible to incriminate any particular one The cultures from the heart blood and from the spleen have yielded a *Staphylococcus aureus* which is hæmolytic and exhibits a positive coagulase test "

Sequelæ of vaccination —A healthy child vaccinated at the age of 3 months erupted 7 weeks later with regional papular eczema of the type that has been called lichen simplex, most profuse in the axilla of the vaccinated arm but extending also round the whole brachium and across the upper part of the chest anteriorly and posteriorly to the opposite shoulder Though the majority of the elements were lichenoid there were also scanty crops of larger papules which vesiculated apically but soon lost their areola and dried up with a tiny scab The vaccinal area was of moderate size and healed but tumid and inflamed Seen a week after the onset she was in good general condition but cried continuously

This regional eruption was topically related to vaccination and was reported to us on account of its interest Accidental observations revealed unreported sequelæ in the form of chronic manifestations of originally postvaccinal urticaria, and we were unlikely to be asked to see late generalised rashes not simulating any infectious disease and not obviously connected with vaccination The following late eruptions, however, have recently been reported · papular urticaria (7 weeks after vaccination), generalised bullous impetigo (9 weeks), in which the vaccinal area was heavily crusted and had failed to heal, and 2 cases of erythema marginatum (8 weeks, 11 weeks) In both the marginate cases some lesions showed urticarial characteristics The earlier case was an adult, some of whose lesions persisted for a month while other areas desquamated

SUMMARY

After about 500,000 vaccinations in the summer of 1942 in Glasgow, 123 regional or generalised postvaccinal rashes were reported Many cases, especially those of slight degree, eluded formal report The majority appeared 7–11 days after well-marked positive primary vaccination of children A regional papular eczema erupted 7 weeks after vaccination of an infant Diagnostic difficulty was at first considerable but soon diminished except in some cases of papular urticaria Ætiological findings were negative Of 98 erythematous or urticarial eruptions 37 were papular urticaria and 20 pleomorphic types of erythema multiforme Though regarded as impetigo bullosa a group of cases simulated multiple auto-inoculations No case was classified as generalised vaccinia A previously healthy breast-fed boy positively vaccinated when aged 8 weeks at a vaccination station died 10 days later of exfoliative dermatitis on the sixth day of illness or fifth day of the complicating eruption, the complicating disease was regarded as staphylococcal

This paper is partly based on material supplied by my colleagues in the Public Health Department

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EFFECT OF
SULPHONAMIDE PREPARATIONS ON EXPERIMENTAL INFECTED WOUNDS

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BATTLE conditions in modern warfare often make orthodox surgical treatment impossible In these circumstances it has been suggested[1] that wounds should be filled with a sulphonamide paste without more than superficial cleansing, and covered by an occlusive dressing which would remain in position for several days The purpose of the present paper is to describe an investigation of the therapeutic activity of various preparations of sulphonamides in these circumstances, this is the conclusion of a wider study of the whole subject, and other aspects—the effect of these preparations on the rate of absorption of the sulphonamides and their histological effects on the tissues—have been described elsewhere (Fuller, Hawking and Partridge 1942, Hawking 1942) At the end of the paper Gardham's proposal will be evaluated in the light of the whole experimental evidence which has been accumulated

TECHNIQUE

Rabbits weighing about 1 5 kg were used The animal was anæsthetised with ether, and a small incision was made through the skin proximal and lateral to the popliteal space A small pair of scissors was inserted and the hamstring muscles were clipped in many places, extending up to the ischium and great trochanter Through a pipette, 1 c cm of a 12 hour culture of hæmolytic streptococcus (strain Pion) was introduced into the wound Strain Pion is very virulent for rabbits and is also quite sensitive to sulphanilamide The number of MLD contained in this inoculum was not estimated exactly, but, since animals died with equal rapidity when dilutions of 1/1000 and 1/10,000 were used, it is considered that considerably more than 10,000 MLD of the streptococcus was employed A standard amount of the preparation, equal to 0 6 g sulphonamide, was inserted in the same locality by means of a syringe and a long blunt needle The opening of the wound was closed by a purse string suture Animals which survived were observed for 30 days, after which they were killed, and the wounds were examined histologically In animals which died in less than 30 days, a culture was made from the heart blood, and in all cases streptococci were discovered Under these circumstances, control untreated animals died in about 1–5 days (usually in 2 days) with septicæmia, peritonitis, &c (see below)

In this technique the original wound was designed to resemble the type of lesion produced by a high velocity missile—a small puncture through the skin, with extensive laceration of the underlying muscles The subsequent infection and treatment were both much more intense than those of a natural wound would be Although the conditions may appear somewhat artificial, this arbitrary standardised procedure makes possible a more accurate comparison between the different preparations than would be possible with natural, wounds Experiments of this kind give information concerning the *comparative* value of one preparation contrasted with another, rather than concerning the *absolute* value of such treatment in actual human wounds Thus, although wounds infected with organisms less sensitive than strain Pion would respond less readily to sulphonamides, the relative efficacy of the different preparations would, nevertheless, be the same as that found below

The preparations employed in this work were as follows

Hypoloid sulphanilamide a Burroughs Wellcome preparation containing a 15% solution of the compound in combination as sulphanilamide lactoside sodium formaldehyde sulphoxylate (LSF)

Preparation J (aqueous) sulphanilamide 30, calcium citrate 0 21, sodium alginate 0 21, spermaceti 0 06, water to 100

Preparation K (aqueous) sulphanilamide 30, beeswax, cetyl alcohol and oleic acid each 1 4, triethanolamine 0 35, water to 100

Preparation L (aqueous) sulphanilamide 30, triethanolamine 0 33, stearic acid, white beeswax and wool fat each 1 41, water to 100

Preparation B (oil in water emulsion) sulphanilamide 30, liquid paraffin 28 5, cetyl alcohol 1 4, stearic acid 2 0, triethanolamine 1 0, arachis oil 1 5, water to 100

Preparation C (oil in water emulsion) sulphanilamide 30, beeswax 0 7, cod liver oil 49, oleic acid 3 6, sodium hydroxide 0 5, water to 100

Preparation D (oil) sulphanilamide 30, beeswax 10, cod liver oil 60

Microcrystalline sulphathiazole a 20% suspension of microcrystals in saline (Chambers et al 1942)

Microcrystalline sulphadiazine a similar suspension, 8%

Further details about these preparations are given by Fuller, Hawking and Partridge (1942)

RESULTS

In the first series of infections the sulphonamide preparation was applied immediately after the infection The proportion of animals which survived is shown in table I, and the rate of absorption of sulphonamide (as judged by the average urinary excretion) in table II The relative rates of absorption and excretion are concisely illustrated by a comparison of the percentage *excretion on the first day* with that on the combined fourth and fifth days, more detailed information is given elsewhere (Fuller, Hawking and Partridge 1942) Among the four animals treated with sulphanilamide

TABLE I—NUMBER OF ANIMALS WHICH SURVIVED WHEN TREATMENT WAS APPLIED IMMEDIATELY AFTER THE INFECTION

Treatment	Proportion of animals which survived	Average days of life in animals which died
Controls	0/14	2 3 (1–5)
Sulphanilamide preparations—		
Hypoloid LSF	0/4	4·5 (3–6)
Aqueous J and K	2/10	6 6 (5–11)
Oil in water emulsion, B & C	5/10	7 4 (5–12)
Oil D	7/10	8 7 (8–9)
Microcrystalline sulphathiazole	10/10	—
,, sulphadiazine	4/5	10
Sulphathiazole injected subcutaneously	5/5	—

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[1] Lieut. Colonel A. J Gardham, in a private memorandum to the War Wounds Committee of the Medical Research Council

TABLE II—EXCRETION OF SULPHONAMIDE IN THE URINE AFTER APPLICATION OF VARIOUS PREPARATIONS CONTAINING 0 6 G SULPHONAMIDE TO INFECTED WOUNDS IN RABBITS

Preparation	No of rabbits	Amount excreted per day (mg)					Amount recovered during first 5 days			Excretion on later days (mg) and remarks	Blood concentration after 3–6 hours (mg per 100 c cm)		Proportion of animals surviving
		1st	2nd	3rd	4th	5th	Total (mg)	Percentage of total on— 1st day	4th and 5th days		Free	Total	
Hypoloid sulphanilamide LSF	4	323	16	11	10	5	365	91	4 1	Rabbits died between 3rd and 7th days	2 4	5 0	0/4
Aqueous J	4	247	74	15	6 9	0 9	344	73	2 2	—	6 9	10 6	2/10
„ K	3	163	25	28	1 4	—	217	75	0 6	2 dead on 4th day, no sulphanilamide in wound on 4th day	—	—	
Oil in water emulsion B	5	160	80	22	13	1 8	277	58	5 4	No S in wound on 5th and 6th days	3 8	5 9	5/10
„ „ C	3	222	81	6 1	4 6	1 5	315	70	1 3	No S in wound on 7th day	—	—	
Oil D	6	144	99	50	26	11 5	330	44	11	6th, 6 2, 7th, 4 7 No S in wound on 8th day	1 3	3 0	7/10
Sulphathiazole	12	59	68	66	63	49	305	19	37	6th, 28, 7th, 16	1 6	2 5	10/10
Sulphadiazine	3	117	119	91	57	38	422	28	22	6th, 28, 7th, 30, 8th, 32, 10th, 17, 12th, 18, 14th, 11, 17th, 6 0 Total excretion, 511 mg	3 1	4 3	4/5
Volume of urine (c cm)	—	89	106	130	139	114	—	—	—	—	—	—	—

LSF, none survived and life was only slightly prolonged, among the animals treated with the two aqueous preparations of sulphanilamide, J and K, only 2 out of 10 survived These three preparations are quickly absorbed and excreted, and presumably the sulphanilamide is removed from the wound so quickly that its bacteriostatic action is exhausted before the defence mechanisms of the body have been sufficiently mobilised With the oil-in-water emulsions, B and C, the sulphanilamide is also rapidly absorbed and excreted, although other work has shown that when the surface volume ratio is not too great the presence of this emulsion does delay absorption to a moderate extent, 5 out of 10 rabbits survived. With the oily preparation D, absorption is more delayed and the therapeutic results are improved, 7 out of 10 surviving Including results obtained with normal rabbits, described elsewhere, it is found that, according to their rates of absorption, the preparations should be arranged in the following order

Sulphanilamide LSF (most rapid)
Aqueous preparations (J & K)
Oil in-water emulsions (B & C)
Oily preparation D (least rapid)

According to the therapeutic effectiveness, the compounds should be ranged in the reverse order Admittedly the numbers of the rabbits are small, but nevertheless the correlation between these two aspects is impressive Since the action of sulphonamides is bacteriostatic rather than bactericidal, this is what would have been expected on theoretical grounds—that any factor which delays the absorption of sulphanilamide, and thus prolongs its presence in a wound, thereby increases its therapeutic efficacy In the groups treated with microcrystalline sulphathiazole or sulphadiazine, all (10/10), or all but one (4/5) of the animals survived, the superiority of these preparations may be due partly to their slower rates of absorption and partly to their higher bacteriostatic activities

TABLE III—EFFECT OF DELAYING THE TREATMENT

Preparation	Interval before treatment (hr)	Proportion of animals which survived	Days of life in animals which died
Controls	—	0/3	1, 2, 2
Sulphathiazole	0 6 17	4/4 2/4 3/4	13, 13 20
Aqueous sulphanilamide K	0 6	1/2 0/2	6 8, 12

During this work a comparison was made between the effect of treatment by local application and treatment by systemic administration Five rabbits were given the standard dose (0 6 g) of sulphathiazole by subcutaneous injection instead of by insertion into the wound All survived and consequently in this series no evidence was obtained as to the relative value of the two methods However, this comparison has now been studied by so many workers, and the value of local application is now so widely recognised, that additional work was considered unnecessary

TABLE IV—EFFECT OF INFECTING THE WOUND 24 HOURS AFTER INSERTION OF THE SULPHONAMIDE PREPARATION

Preparation	Proportion of animals which survived	Days of life of animals which died
Controls	1/4	4, 4, 6
Aqueous K	3/4	6
Oil in water emulsion B	2/4	3 6
Sulphathiazole suspension	4/4	—

Effect of delay in treatment—In another series of animals a delay of 6 or 17 hours was allowed to occur before the sulphonamide compound was inserted The results are shown in table III The well-known effect is observed, that if treatment is delayed the therapeutic results are impaired, although in this case the impairment was not so great as might have been expected As this aspect has also been much studied by others no further animals were sacrificed merely to emphasise this point

Duration of bacteriostatic action in the wound—A series of experiments was studied in which the wound was inflicted and the standard amount of sulphonamide (0 6 g) inserted, and 24 hours later an attempt was made to infect the wound by inserting 0 5 c cm of a 1/10 dilution of a 12-hour culture of streptococcus The results (table IV) show that a certain degree of bacteriostatic action is still present 24 hours after treatment The number of experiments is too small for a detailed comparison to be made, but no more animals were used since a more accurate study of the persistence of sulphonamides in wounds had been made by chemical methods (Fuller, Hawking and Partridge 1942)

HISTOLOGY

The effects of these preparations on the histology of uninfected wounds has been described elsewhere (Hawking 1942), here the description will be limited to the changes in the infected wounds The appearances are summarised in table V

Untreated wounds (*a*) *Immediate*—In animals which died within 2–4 days the wound usually contained a small amount of transparent sticky fluid, pus was practically never seen

Microscopically the lesions were characterised by necrosis of the muscle and other tissues, and by exudation of fibrinous fluid Leucocytes were few and they quickly died and disintegrated (*b*) *Delayed* —In animals which were kept alive by the subcutaneous administration of sulphathiazole (table I), and which were killed after 39–88 days, there was a variable amount of semifluid white or yellow caseous material enclosed in a cyst wall of variable thickness, drainage of the wounds had been prevented by suturing the mouth and the caseous material was derived from the necrotic tissue and inflammatory exudate Adjacent muscles were atrophied and fibrosed to a variable extent Microscopically there was much caseous material consisting of necrotic debris and broken portions of muscle fibres This was surrounded by much collagenous fibrous and granulation tissue in which were embedded necrotic muscle fibres, often calcified and often surrounded by giant cells, clusters and strands of foam cells, and small abscesses

TABLE V—SUMMARISING THE HISTOLOGICAL APPEARANCES OF INFECTED WOUNDS TREATED WITH THE VARIOUS PREPARATIONS

Treatment	Histological reaction	
	Immediate	Delayed
Controls	Exudate of fibrinous fluid with few leucocytes necrosis of muscle leucocytes and connective tissue	Encystment of caseous debris by fibrous tissue Calcification of necrotic muscles fibres and giant cell reaction to them Phagocytes loaded with fat globules Atrophy and fibrosis of muscle
Aqueous K	Like controls, but more leucocytes commencing calcification of muscle fibres, presence of paste	Like controls (1 animal)
Aqueous J	Like K	Like controls plus giant cells and masses of alginate in some animals
Oil in-water emulsion B (paraffin)	Like K, but oil globules more conspicuous	Like controls, plus "paraffinomatous" tissue in walls of cyst
Cod liver oil preparations C & D	Like K	Like controls, but more fibrosis and an intense giant cell reaction to the cod liver oil
Microcrystalline sulphathiazole and sulphadiazine	No animals died	Like controls Caseous material and fibrosis minimal

Preparation K (aqueous) —In rabbits dying after 4–8 days, the appearance was much the same as that of the controls, except that the wound often contained some whitish fluid (base of preparation), sulphanilamide had all been absorbed Microscopically the remains of the paste were seen There was an exudate of fibrin, and the cells (mostly mononuclears) were much more numerous than in untreated wounds, the greater part of the cells were degenerate, the cytoplasm occasionally contained numerous fine vacuoles, but there did not seem to be general blockage of the phagocytes by oil globules The necrosis of muscle was similar to that of the controls, by the 4th day and onwards some of the necrotic fibres had undergone calcification Also by the 4th day granulation tissue had been formed, although it did not yet contain new collagen In one rabbit killed after 37 days, the wound resembled the controls

Preparation J (aqueous) —In rabbits which died after 6–8 days the wound contained a little white creamy material. Microscopically the appearances were similar to those with preparation K, except that the paste was usually inconspicuous In 3 rabbits which were killed after 31–39 days, white caseous material was found enclosed in thin-walled cysts Microscopically these resembled the controls, except that in one animal masses of hyaline material (alginate) were embedded in the fibrous tissue, and giant cells were present In 3 rabbits, 33 days after this preparation had been applied to an uninfected surface wound, there was much fibrosis and a few giant cells, in one case there were many small masses of alginate embedded in the fibrous tissue under the regenerated epithelium

Preparation B (paraffin oil in water emulsion) —In animals which died in 5–7 days the wound usually contained a thin white cream Microscopically the appearances resembled those with paste K Masses of fine globules of oil were present among the exudate, most of the phagocytic cells were necrotic, but in some cases their cytoplasm was distended with vacuoles, presumably of oil, however, there did not appear to be a general blockage of the phagocytes In animals which died after 31–36 days thin-walled cysts of caseous material were present as in the controls Microscopically the general appearance resembled that of the controls, but the fibrous tissue forming the wall of the cysts contained masses of "paraffinomatous" tissue—i e, globules of paraffin of all sizes from intracellular vacuoles to medium size extracellular masses, embedded in cellular tissue (Hawking 1942) When this preparation was applied to an uninfected surface wound and the animals were killed after 31–60 days, the fibrous tissue underneath the regenerated epithelium usually contained fusiform masses of similar paraffinomatous tissue

Cod liver oil pastes C and D —In 3 rabbits dying after 8–9 days, the wound contained orange pasty material Microscopically the general appearances resembled those with paste K Varying quantities of oil globules were present Giant cells were usually absent, although in one uninfected surface wound, examined after 8 days, they were very numerous In rats with infected wounds treated with these preparations no giant cells were present after 10 days, but they were numerous after 20 days In rabbits killed between 24–71 days after wounding, there was a cyst of brownish (or whitish) caseous material, the walls of the cyst were usually thick, with a rough internal surface, but in a few cases they were thin and smooth Microscopically the general appearance resembled the controls, fibrous tissue and collagen formation being plentiful, in addition there were great numbers of giant cells, which sometimes enclosed hyaline material, either eosinophil or non staining, presumably the remains of the cod liver oil, sometimes the giant cells contained needle shaped spaces (crystals) Masses of endothelioid cells with some lymphocytes were often present around the giant cells Altogether the appearances were similar to those caused by tuberculosis This is the typical histological reaction to cod liver oil (Hawking 1942)

Microcrystalline sulphathiazole —With this preparation no animals died in less than 13 days, at which time (2 rabbits) there was a cavity containing white caseous material Microscopically there was pus and infiltration of the adjacent tissues with mononuclear cells and necrosis of muscle fibres, in one animal the necrotic fibres were calcified and attacked by giant cells and there was much granulation tissue and collagen In animals which were killed after 30–90 days the appearances were similar to those of the untreated controls In about half the cases the caseous material was small in amount and the cyst walls were always thin and smooth The amount of caseous material and of fibrosis present after treatment with this preparation was less than that after any of the other preparations

Microcrystalline sulphadiazine —In 4 animals which were killed after 37–59 days the appearances were indistinguishable from those after treatment with sulphathiazole

DISCUSSION

The original proposal—that when battle conditions render proper surgical treatment impossible wounds should be filled with some semifluid sulphanilamide preparation—may now be considered in the light of the experimental evidence Two questions are to be answered (1) which is the best preparation to use for this purpose, and (2) to what extent and under what circumstances is this method of treatment advisable ?

Fuller, Hawking and Partridge (1942) found that the persistence of a sulphonamide in a wound could be prolonged (*a*) by using an oily base, or, less effectively, by using an oil-in-water emulsion base, provided that the preparation is applied as a compact mass and not as a thin film, or (*b*) by using one of the less soluble sulphonamides—e g, sulphathiazole or the still less soluble sulphapyridine or sulphadiazine In the experiments described here it has been shown that a satisfactory therapeutic result (prevention of streptococcal septicæmia) was obtained most frequently with the microcrystalline preparation of sulphathiazole, and that oily preparations of sulphanilamide were more effective than aqueous ones From the histological studies (Hawking 1942, and above), however, it was found that all oils ultimately excited an injurious reaction of the tissues Cod-liver oil was one of the worst in this respect, linseed oil, lanoline and liquid paraffin were moderately bad, while cotton-seed oil was the least provocative of all From this evidence it is concluded that the best preparation to use would be the microcrystalline preparation of sulphathiazole, since it is the most effective therapeutically and the least injurious histologically, unfortunately supplies of this will not be adequate for a long time The next best preparation would be an aqueous paste such as preparation K, although a small unabsorbable residue would be left in the wound cavity this would be unimportant compared with the amount of fibrinous exudate and necrotic cellular debris which would be present in such circumstances, and the adequate drainage which is required for this necrotic material would also deal with the residue from the paste The slight inferiority of this preparation from the therapeutic aspect would be compensated by its innocuousness from the histological aspect The immediate irritation caused by it may be somewhat diminished by slight modifications of the formula, including the use of stearic acid instead of oleic acid as described above under preparation L (Hawking 1942) If supplies were available, this paste could be further improved by substituting sulphathiazole for part of the sulphanilamide, for the treatment of *large wounds it might be desirable to reduce the total* sulphonamide content to 15% or 10%, so as to avoid using more than 15 g sulphonamide for any one patient Oily preparations of all kinds should be avoided in wounds except where the oil is incorporated in gauze, similar to 'Vaseline' gauze, so that the whole packing can be removed en masse at a later stage leaving no oil in the tissues If oil is left in wounds, it will cause undesirable connective-tissue reactions which may be expected to result in delayed healing, hypertrophic scars and breaking down of the wound Even when it is applied to a raw surface, some of the oil may become embedded in the connective tissue underneath the new epithelium, which is clearly undesirable If an oil is desired for the special circumstances mentioned above, a preparation of cotton-seed oil would seem to be the least harmful—e g, sulphanilamide 10–30%, cotton-seed oil 30%, triethanolamine 1%, stearic acid 2%, cetyl alcohol 1 4%, water to 100%, chlorocresol 0 1–0 2% or some other preservative might be added with advantage to ensure the absence of moulds and of sulphonamide-resistant organisms

The question of the advisability of using any sulphonamide preparation at all in wounds can be settled only by surgical experience under actual battle conditions, but tentative suggestions may be made According to reports from the Middle East Forces (*Army med Direct Bull* 1942, No 11) wounds which have been excised heal much more rapidly than those which have received only sulphanilamide powder and dressing, therefore, when excision is possible, this should be practised On the other hand, the same report states that it has taken twenty-four hours or longer for the majority of the wounded to reach the surgeons In the above experiments it has been shown that streptococcal infections of a wound, which would rapidly cause fatal septicæmia if untreated, may be suppressed by the insertion of a suitable sulphonamide preparation, even if applied after a considerable delay Although these results have been obtained with sulphanilamide-sensitive organisms, such organisms must include a large proportion of those occurring naturally in contaminated wounds, and even on less sensitive pathogens the sulphonamide should exert a restraining, even if not completely inhibitory, influence Consequently it seems that much benefit ought to be received from some simple dressing which might be applied by relatively unskilled hands—e g, by a medical orderly—and which would delay the bacterial growth until the patient reached a place where proper surgical treatment is possible By this means gross sepsis would be diminished and the surgeon would be presented with wounds which were only lightly infected The simple dressing might be (1) sterilised sulphanilamide powder sprinkled from a cellophane envelope, (2) the ordinary field dressing impregnated with sulphanilamide (this would be extremely simple to apply, but would be practical only when new field dressings are to be issued), or (3) a semifluid sulphonamide preparation, squeezed out of a collapsible metal tube The best preparation to use has been indicated above Whatever application is made, it is important that it should not interfere with drainage from the deeper parts of the wound In modern warfare there are many occasions, as in tank battles, commando raids, or torpedoing at sea, when the medical conditions are very primitive and surgical excision of a wound is impossible; in these circumstances the use of simple sulphonamide dressings would be both practical and advantageous

SUMMARY

Using experimental wounds in rabbits, a study has been made of the proposal that when battle conditions make excision of wounds impracticable the wounds should be filled with some semifluid preparation of a sulphonamide, and then covered with an occlusive dressing to prevent exogenous infection

It was found that the persistence of the sulphonamide in a wound could be prolonged by incorporating sulphanilamide in an oily medium or by using a less soluble sulphonamide, such as sulphathiazole or sulphapyridine Therapeutically (i e, prevention of streptococcal septicæmia), the best results of all were obtained with a preparation of sulphathiazole consisting of microcrystals suspended in saline, with sulphanilamide, which is more soluble and more rapidly absorbed, better results were *obtained with oily preparations than with aqueous ones*

Histologically, the presence of an oil in the wounds caused undesirable tissue reactions Of the oils tested, cod-liver oil was especially bad in this respect, liquid paraffin was moderately bad, while cotton-seed oil was the least harmful The best preparation of all was the microcrystalline preparation of sulphathiazole, which was also the most effective therapeutically

Judging by reports from the Middle East Forces, sulphonamide dressing of a wound is inferior to excision Since, however, there are many occasions when exigencies of war render surgical operations impracticable, it is considered that dressing the wounds with a semifluid sulphonamide preparation would be advantageous in restraining bacterial growth until more elaborate treatment was feasible, in these circumstances, the best preparation to use would be the microcrystalline suspension of sulphathiazole, or, failing that, an aqueous preparation of sulphanilamide as described above

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PLASMA-VISCOSITY
IN PULMONARY TUBERCULOSIS

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THE erythrocyte sedimentation test (EST), as commonly used in pulmonary tuberculosis, involves the measurement of the average sedimentation velocity over the first hour The measurements are usually made at room temperatures with *random* volumes of cells In such circumstances anomalous results are often encountered Recent experiments [1 2] have shown that in sedimentation tests with controlled cell-volumes at constant temperature the maximum velocity is largely dependent on the agglutinating power of the plasma, and that this agglutinating power can be demonstrated as a complex function of the plasma-viscosity It therefore seems possible that the plasma-viscosity may serve as a useful clinical index If it were established as such it would have many advantages over the EST Errors due to varying volumes of red cells would be eliminated by

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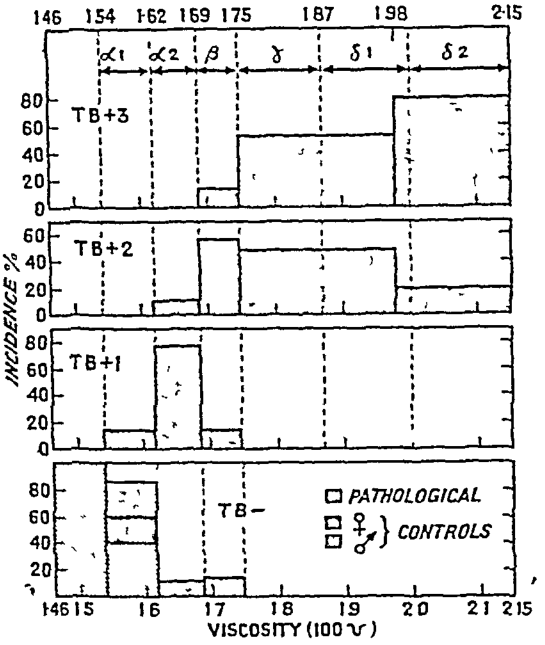
[1] Whittington, R B *Proc roy Soc* B 1942 131 In the press
[2] Whittington, R B and Miller, A K *Tubercle*, 1942 In the press

the removal of the cells , and advantage could be taken of a refined viscometric technique giving an accuracy of measurement which is difficult to attain when erythrocytes are involved The measurement of plasma-viscosity, moreover, appears to lead us nearer to the underlying pathological changes in the blood, for viscometry together with protein estimation provides a means of studying the variations in the state of the colloids



Viscometric distribution of Ministry of Health groups in pulmonary tuberculosis TB − TB + 1 etc. Ministry of Health group α1, α2, β etc. suggested six categories in order of increasing toxæmia

The present work covers 76 viscosity measurements, of which 63 were made on tuberculous patients, 1 on a post-operative colostomy case, and 12 on healthy adult controls, 8 male and 4 female

In 13 of the experiments " controlled " sedimentation tests were carried out along with the viscosity measurements , the technique already described[2] was then followed in detail In other cases only 4 c cm of venous blood (with stasis) was used In each case 20% by volume of 3 8% aqueous solution of sodium citrate was accurately pipetted into the blood

The kinematic viscosity coefficient (ν = absolute viscosity divided by density) of the citrated plasma, was measured at 20 0° C in a modified Ostwald viscometer, whose dimensions have been given[2] A varying coefficient, based on experiments with pure liquids, connected ν with the time of flow The normal value of 100ν is of the order of 1 5 sq cm per sec , or 1 5 poises per g per c cm

Clinical correlation —The figure shows the incidence, on a viscometric basis, of the Ministry of Health (M of H) groups in pulmonary tuberculosis Incidence of the control viscosities is also shown, revealing a tendency for the viscosity to be higher in normal women than in normal men

The four M of H groups are sufficient for administrative purposes, the three "TB+" divisions being mainly based on the extent and distribution of the lesions It appeared, however, both possible and desirable from a clinical standpoint to extend the number of gradations to six While radiological findings necessarily provided much of the evidence for grading, the cases were carefully reviewed in the light of such evidence of toxæmia as sanatorium routine can provide When the gradations are increased to six they become more difficult to define precisely The figure helps to show their relation to the M of H groups, and shows where the viscometric scale was divided into six parts (On the evidence so far available the dividing lines appear to coincide in general with critical values of the agglutination and controlled velocities)

The degree of correlation between viscometric and clinical gradings in 53 cases is discussed below On 10 of these cases, viscosity measurements were repeated with the object of comparing the individual viscosity and clinical changes

DISCUSSION

Discrepancy between clinical and viscometric gradings was limited to a difference of one category either way, there being six such categories covering the entire range Four unexplained discrepancies of this magnitude occurred, two in each direction In another case the viscosity was apparently one grade too high, but this was amply explained by a recent pleural effusion In 3 cases the precise clinical grading was doubtful, the viscometric category being either correct or one grade wrong In the 53 single tests, therefore, the agreement between clinical observations and viscosity measurements was between 87% and 92%

In the double tests the most outstanding change recorded was a fall in viscosity of nearly 10% over a period of 14 days coinciding with the beginning of closed suction drainage, and with a well-marked improvement in the patient's condition There is, of course, insufficient evidence to show what is the smallest change in viscosity which can be clinically significant, but in the 10 cases examined all changes in viscosity of 2 5% or more were accompanied by sensible changes in condition

The postoperative colostomy case had a value of 100ν = 1 636, which as the figure shows would have placed him in the α_2 tuberculous category, and on the present evidence is definitely a pathological value

CONCLUSIONS

Estimations of the kinematic viscosity coefficient of the plasma in 63 tuberculous patients, one surgical case, and 12 healthy controls suggest that this measurement gives a good indication of the severity of pulmonary tuberculosis Further insight into the degree of toxæmia might be obtained by carrying out some form of protein analysis as well

We wish to thank Dr W H Grace of Chester Royal Infirmary for providing some of the control samples

Medical Societies

ROYAL SOCIETY OF MEDICINE

At a meeting of the section of Obstetrics and Gynæcology on Oct 16, with Dame LOUISE MCILROY, the president, in the chair, a discussion on

Stillbirth and Neonatal Mortality

was opened by Prof DUGALD BAIRD Taken together these deaths, he said, exceeded in number deaths from all forms of tuberculosis The infant-mortality rate had been shown to depend largely on poverty, and there was some evidence that the stillbirth and neonatal death-rates were affected in the same way Thus in Scotland the combined rates were 42 and 35 per 1000, in England and Wales 38 and 26, and in Holland 25 and 21 The stillbirth-rates are influenced by maternal age and parity , thus they were high in first children, though this is partly counteracted by the low infant mortality among first children Burns, in a recent Birmingham report, had shown that for each size of family there was a maternal age which gave each child the best chance of survival In a large proportion of stillbirths the cause, Professor Baird said, is unknown , in another big group difficult labour is responsible, yet there may have been nothing in the maternal condition to indicate the need for cæsarean section In some emergency cases in his experience the child might have been saved if the mother had been admitted during labour Prematurity is an important cause of neonatal deaths, and its prevention offers a difficult problem He believes that notification of prematurity is worth considering , in Chicago (where the infant-death rate is only 31 per 1000) prematurity must be notified within an hour of birth He accepted the definition of a premature infant as one which weighed less than 5½ lb at birth Of 67 neonatal deaths of premature infants in the Aberdeen Hospital in a year, 45 had been from weakness, 20 from infection and 2 from other causes In private patients—that is, among the better-to-do—he had found less prematurity less infection and a lower stillbirth-rate, so that he believed diet to be very important. The incidence of extreme poverty is twice as high in Scotland as in England, and the housing problem 6 times as bad. Experiments on animals at Aberdeen had shown that physical defects such as cleft palate could be produced as regularly as clockwork by faulty diets. In prosperous parts of the country the infantile mortality is low, but the birth-rate is also low and there is a tendency to postpone the birth of the first child. These regions, he thinks, are solving the infant mortality problem at the cost of dying out. The causes of the greater part of our loss of infant life are malnutrition of the mothers, too rapid childbirth, and slum conditions. He advocated better feeding, more rest, and education for the mother, more antenatal beds in hospitals, and better training of doctors, midwives and health visitors. The child should be reared under conditions which allow his maximum development. The low birth-rate he attributes mainly to the financial burden of bearing children.

Prof **Charles McNeil** felt that the first month of life should be the joint concern of the obstetrician and the pædiatrician. The prevention of child death at this age, he said, is partly obstetric, depending on the care received by the mother during pregnancy and labour, and partly pædiatric, depending on the care of the baby. In a series of 5300 viable births, 414 were stillbirths and 236 neonatal deaths (650 deaths in all). The stillbirths were thus the more serious part of the problem and prematurity was a common cause; over half the premature infants died. A new study of prematurity is needed, he considered. In this series, all the infants (68) weighing less than 2½ lb died. He showed slides of the lung and the stomach of a premature infant weighing 2¼ lb. The walls of the alveoli were much thicker and more rigid than those found in the mature child, and the secreting tissue of the stomach was barely differentiated. He advised that in order to save the lives of premature children the pædiatric staff in maternity hospitals should be strengthened. In hospitals the infants must be protected from infection, and it must be borne in mind that the health of the mother cannot be separated from that of the child. A radical study of prematurity by hospital teams should extend into the home during pregnancy and after discharge of mother and child from hospital. A standard of prematurity should include both an upper and a lower weight standard (say 2½ lb, since below that weight 100% of children in his series died).

Sir **Francis Fremantle** considered what could be done on the communal side to abate the stillbirth and neonatal death-rate. Prevention starts in the home and can only end when mother and child return to conditions where they can lead a healthy life. The training of midwives and maternity nurses is going steadily ahead, but the Ministry of Health recognises the difficulty of finding women to undertake this work and of making it attractive enough to keep them. Conditions of service and remuneration must be improved and the education of girls must be such as to attract into it those who are inclined for this work. The work of antenatal clinics and health visitors must be improved and meals and financial help must be provided for necessitous expectant mothers. Housing and institutional accommodation must be extended, and he is confident that there will be a move forward as a result of the war.

Dr **A Doyne Bell** quoted the saying, that the maternal mortality-rate is a yardstick to measure the success of the maternity service. The meeting, however, was not likely, he thought, to regard the baby as a by-product and the neonatal death-rate must be taken as a second yardstick. He quoted from a recent *Lancet* leading article[1] in which the care provided for the baby during the first month of life was shown to be inadequate. This had been prompted by the paper by Dr F J W Miller in the same issue where the inaccuracy of certification was stressed. Prematurity in his view depended only on a time factor, meaning birth before the 40th week, whereas immaturity could be measured by the birth-weight. He referred to the work of J H Ebbs and his colleagues in Toronto, who have compared the results in a series of women on a poor diet with those of women in similar circumstances whose diet was supplemented with milk, eggs, oranges, tomatoes and cheese during the last three or four months of pregnancy. The miscarriage, stillbirth and prematurity rates were found to be much lower in the group with the supplemented diet. The People's League of Health[2] had found that women on supplemented diets were more likely to carry their children to term than controls on a poor ordinary diet, but he thought the numbers investigated had been too small. He agreed with Dr McNeil that the care of premature infants was work for a pædiatrician, and he thought that local authorities should be pressed by the Ministry of Health to provide adequate pædiatric personnel.

Prof **James Young** also discussed the effect of maternal nutrition on the child. It has been known for some years that severe calcium-vitamin D deficiency in the mother was liable to produce rickety children even in the uterus; and Mellanby has shown that puppies delivered by a bitch suffering from vitamin-D deficiency develop rickets after birth even when they are properly fed. It has also been shown in New York that there may be a large amount of subclinical deficiency in children born of ill-nourished mothers. The observations in the People's League of Health report were in his opinion large and well controlled, and the figures had passed the criticism of distinguished statisticians. They were based on the study of 5000 antenatal women in 10 London hospitals. They were divided into 2 equal groups, and 2500 received additional supplements to their diet of calcium, iron, iodine and vitamins A, B, C and D. The remaining women acted as controls. The supplementary diet had reduced the toxæmia rate by about 30% and the prematurity rates by about 17%, and since it was given in the form of tablets it must be regarded as showing the minimal rather than the maximal effect of a good diet. Hargreaves at the British Post-graduate Medical School had studied a large number of booked cases since 1937. The average birth-weights of full-time children has shown a decline since the prewar years from 7·3 to 7·1 lb in primigravidæ and from 7·6 to 7·4 lb in multigravidæ. There had also, however, been a decline in prematurity rates from 19·7 to 14·2 in primigravidæ and 16·7 to 13·6 in multigravidæ.

Professor **Baird**, replying, remarked that a new large-scale experiment had been begun in Toronto. He commented on the appointment of Dr J C Spence as professor of child life at Newcastle, and advocated more appointments of the same kind.—Professor **McNeil** remarked that the chair in question was really a chair of child health. He himself was professor of child life and health, and had spent the afternoon discussing child death. When that was solved, he thought, we could begin on the infinitely larger problem of child life.

BRITISH ORTHOPÆDIC ASSOCIATION

In the course of the annual meeting of the association at Nottingham[3] on Sept 25–26, clinical demonstrations were given at the Harlow Wood Orthopædic and Nottingham General Hospitals.

Mr A N **Birkett** (Nottingham) reviewed the cases of *Fractures and Dislocations of the Cervical Spine* treated by Mr Frederick Crooks and himself at the Nottingham General and Chesterfield Royal Hospitals. During the last 7 years they had seen 59 cases, among 38,000 fractures of all kinds and 626 spinal fractures. Spinous process fractures, they find, can be related to fracture dislocation of the neck or as isolated fractures of the clay shoveller's type, due to direct violence or muscle violence. Falling down stairs was the chief cause in their series and being blown by bomb blast a new one. They believe that if the violence causing the injury was of a kind likely to give rise to fracture dislocation, then the presence of fracture of a spinous process must be taken as evidence that some degree of fracture-dislocation was also present, and the case must be treated with appropriate respect. The clay-shoveller's type of fracture was a separate condition and had not been given enough attention. The fracture-dislocations in the series were mainly at the top or near the bottom of the cervical column. Of those near the top, fracture of the atlas, fracture of the odontoid, and displacement of the atlo-axial joint have received adequate attention in published work, but the effect of the specialised anatomy of the axis or the result of violence upon it have not been sufficiently realised Out of the 52 cases of fracture-dislocation there were 6 at this level not including odontoid fracture and 4 of these were lamina fractures Indeed, lamina fractures are hardly ever seen below the axis He explained the mechanism the large spinous process of the axis is pulled down by the strong muscles of the neck, the anterior part of the body is driven down by the force transmitted through the skull, and the *back* of the axis is broken at the pedicle junction—a new and important observation Chronic arthritis, he finds, may play a part in fractures lower down the neck He showed that deformity of the spine was not inconsistent with a good result and no pain He reduces such fractures by means of a halter with the patient under intravenous anæsthesia —Mr Roland Barnes (Manchester) in the discussion urged the use of skull traction as a routine It does away with the need for anæsthesia which may often precipitate pneumonia in these cases In his cases as soon as the fracture is reduced—and he checks it by X rays every half hour—the weight is reduced to about 4 lb , and indeed only about 1 lb is really needed —Mr K I Nissen found that the Nuffield type of respirator did not exercise enough direct pressure to expel mucus in these cases and he prefers an artificial respirator giving direct chest or abdominal pressure

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[1] *Lancet*, Sept 5, p 283

[2] *Ibid*, July 4, p 10

[3] See *Lancet*, Oct 17, p 455

Mr Birkett also described *Two Devices for Fracture Treatment* One is used in fracture of both bones of the forearm , treatment is carried out in the vertical plane instead of horizontally as in Bohler's method , and a form of " Chinese puzzle " is applied to two fingers as a source of pull The second device is a method of applying traction to both limbs with the knees flexed at a right angle during the insertion of Smith-Petersen nails in fractures of the neck of the femur This gives perfect control of position and a curved casette fixed to the peroneal support of the table aids lateral radiograph

Mr R G Pulvertaft (Grimsby), in discussing the *Reduction of Epiphyseal Fractures of the Neck of the Humerus*, remarked on the remoulding which occurred in young bones Even in unreduced severe displacements the results a year or two later were almost indistinguishable from normal Open reduction therefore was not necessary In adolescent cases remoulding is not so complete, and he considers that exact reduction is desirable This may be achieved by open operation , he clears the bone ends and impacts them and uses no plates or other internal fixation When once reduced there is no relapse —Mr George Perkins said that whether they were treated or not no disability was seen after such epiphyseal fractures

Mr J P Campbell (Nottingham) reviewed 54 cases of *Fractures at the Junction of the Lower and Middle Thirds of the Tibia and Fibula* with special reference to recent discussions upon delayed union His series indicated that the severity of the violence was an important factor, and he strongly advocates the use of metal shin-guards by motor-cyclists Pin-traction need not materially delay union, but long fixation in plaster does increase the time of disability because of the stiffness which develops in the knee and foot joints Clinical union is often present before radiographical union, and he thinks that movements could therefore often be started earlier —Brigadier Rowley Bristow thought that more efficient protection for motor-cyclists could be provided by guards fixed to the machine

Mr John Grocott (Stoke-on-Trent) discussed *Plastic Surgery in Hand and Foot Injuries* Three advantages of early grafting of gaping wounds, he said, were the avoidance of skin contracture (which could be more disabling than joint stiffness), the relief of pain, and the protection of exposed tendons For free grafts, if the principles of asepsis, hæmostasis and fixation were adhered to, and provided sulphanilamide dusting was used, up to 95% of successes could be expected He has found the razor graft particularly valuable for the covering of tendons which otherwise become adherent and fixed in the open wound In discussing the use of direct flaps and tube pedicle flaps he indicated that by temporarily obstructing the blood-supply, blood flow via the newly attached section can be forced He finds that sensibility in grafted finger-tips gradually returns —Mr Barnes said he had been using a Padgett dermatome for cutting grafts and had found it a great advance He cuts his grafts about 12 μ thick

Mr James Hardman (Sheffield) discussed *Indications for Operative Treatment in Sciatica* with special reference to prolapsed intervertebral discs Other conditions, such as gluteal fibrosis, sacro-iliac disease and disease of the spinal column, have first to be excluded, and conservative orthopædic treatment tried before the patient is submitted to myelography and operation, and close cooperation is needed between the neurosurgeon, neurologist, orthopædist and radiologist The distribution of pain he considers is probably due to compression of muscle afferents, and interference with ordinary sensation is slight in compression of a single root In practice the syndromes of single-root compression are not clear-cut because of the segmental overlap in skin and muscle and the variable relation of the disc protrusion to the midline Of 79 cases of sciatica 26 came to operation, 5 being cauda equina tumours In 20 prolapsed discs were found 7 at the lumbo sacral disc level, all lateral prolapses , and 13 at the disc between the 4th and 5th lumbar, 5 of these being lateral and 8 in the midline When the disc prolapse is central between the 4th and 5th lumbar it is liable to compress the 1st sacral nerve more than the 5th lumbar, and the syndrome will be a mixed one, often bilateral No patient should be operated on without myelography Exact diagnosis is sometimes possible when air is used, and this has the advantage of avoiding the irritating effects of iodised oil If oil is used the amount injected should not exceed 2 c cm He had noticed the loss of normal lordosis in these patients as the result of postural attempts to prevent pain —Colonel Rex Diveley (chief consulting surgeon to the American Army) said that in the United States the orthopædic surgeon often cooperated with the neurosurgeon at the time of the operation by grafting the spine

Mr S A S Malkin (Nottingham), in *Some Observations on Injuries to the Semilunar Cartilages*, reviewed 185 Service patients treated at Harlow Wood Orthopædic Hospital from the beginning of the war until April, 1942 The proportion of external cartilage lesions to those of the internal cartilage were approximately 1 to 3, which is higher than was formerly thought A major cause of disability following the removal of semilunar cartilages is often quadriceps insufficiency In long-standing cases no one particular type of lesion is found , and arthritis in a mild degree has little effect on the length of postoperative treatment Postoperative rehabilitation at a special centre is of the utmost value in ensuring a satisfactory recovery, and operative treatment for lesions of semilunar cartilages is well justified under conditions of segregation in special centres —Group-Captain H O. Clarke remarked that it was not necessary to operate on every case, nor—at the present time—on anybody who can carry on with his job

Mr Frederick Crooks (Nottingham) described three cases of *Spondylolisthesis* which he had operated on by the transabdominal approach He had found it a straightforward operation with no troublesome hæmorrhage, resulting in no shock or abdominal discomfort A portion of the intervertebral disc was removed anteriorly, the contiguous bony surfaces were freshened, a portion of the iliac crest was placed in the gap, and the patient was kept in plaster for four months

Mr Leslie Morris (Leicester) described a condition under the title of "*Athlete's Ankle*" He had seen 5 examples of the condition, which gave rise to swelling of the ankle-joint and tenderness restricted to its anterior aspect The patients were always experts in the particular sport in which they were concerned The type of violence is usually associated with the extreme plantar flexion of the foot, which only the expert in such activities as sprinting or long-distance football kicking can achieve The X-ray appearances were characteristic, there being some new bone formation on the upper surface of the neck of the astragalus and extra bone formation at the posterior edge of the bone The former he thought due to traction and the latter to compression stresses. Hyperextension may result in subperiosteal hæmorrhage with subsequent ossification and spur formation When consulted for the swelling he reassured patients and they continued at their sport after a short period of physical therapy

Reviews of Books

Studies in Hay-Fever and Asthma

DAVID HARLEY, MD Edin, FIC, first assistant in the allergy clinic, inoculation department, St Mary's Hospital, Paddington London William Heinemann Pp 112 10*s* 6*d*

Dr Harley presents some intensive studies on the chemical and immunological nature of the pollen antigen He records experiments showing how the hay-fever idioceptor differs from the anaphylactic and most other antibodies especially in thermolability, precipitation, complement fixation and affinity for cutaneous tissues He also shows that neutralisation of idioceptor by idiotoxin appears to take place only in vivo—that is, by a reaction involving tissue cells Dr Harley considers that the factor determining whether a person develops allergic symptoms or not is a hereditary one, and connected with the inability of the blood to digest some constituents of the pollen grain He describes the methods of desensitisation employed at the hay-fever clinic at St Mary's Hospital only Timothy grass pollen is used there for testing and desensitisation, though observers in other clinics in Great Britain and abroad do not agree that all hay-fever sufferers react to Timothy grass pollen, or that all sufferers respond to desensitisation with that extract alone, No mention is made of other complicating sensitisations such as feathers, dust, orris root and animal hairs in seasonal hay-fever cases Dr Harley produces conclusive evidence that skin sensitivity is reduced and can even be abolished entirely if suitable doses of grass pollen are given The book is a close technical study of hay-fever, valuable for the expert

War Injuries of the Chest

Editors H MORRISTON DAVIES, M Chir Camb, FRCS, ROBERT COOPE, MD Lpool, FRCP. Edinburgh. E and S Livingstone Pp 131 6*s*

THIS handbook is the outcome of the experience and views of an EMS chest surgical unit whose staff have combined smoothly and easily to produce something full of information and practical advice Arranged on conventional lines, it starts with anatomy, physiology and pathology, and passes to clinical considerations and thence to the actual treatment of injuries, ends with after-care and a good chapter on anæsthesia

The diagrams in the first chapter are helpful and instructive but their promise is not upheld in later pages The effects of atelectasis of different lobes are particularly well illustrated in a series of line drawings Readers are reminded that shock, multiple wounds and hæmorrhage may cause a chest condition to be overlooked In the early stages of treatment the value of high concentration oxygen inhalation and plasma- or blood-transfusion is emphasised If the need for transfusion is urgent rapid administration by more than one vein is advisable Reasons for evacuating a sterile hæmothorax and the behaviour of blood in the pleural cavity are discussed, though some of the points made are controversial Instructions for the care of abdomino-thoracic wounds are clear, many tragedies could be avoided if surgeons remembered that, owing to the height to which the diaphragm rises in the chest, abdominal viscera may be damaged as well as chest contents Early closure of all open or sucking wounds of the chest is rightly held to be of paramount importance, and the danger of increased intrapleural pressure from fluid or air or both should be borne in mind When discussing the treatment of penetrating wounds the indications for early operation and the procedure for delayed handling of retained foreign bodies are detailed, but there is not enough mention of "through and through" injuries caused by bullet wounds The chapter on anæsthesia is able Attention is drawn to the danger, not always fully recognised, of nitrous oxide, particularly if a CO_2 absorber is used, in spite of a good colour, due largely to absorption of CO_2 from the circuit, the patient with a chest injury may be close to the borderline of anoxia, and this may show itself suddenly and disastrously With the increased experience that warfare brings some of the views expressed in this book may have to be modified, but as it stands it is a sound expression of thoracic practice at the present time

Blood Disorders in Children

I NEWTON KUGELMASS, MD, PhD, ScDspec, attending pediatrician, Downtown Hospital and Pan American Clinics London Humphrey Milford, Oxford University Press Pp 897 60*s*

INFORMATION about the blood disorders of children is scanty A book dealing with them ought to be clear and it should not be necessary to include material to be found in regular hæmatological textbooks Dr Kugelmass's desire for completeness traps him into a welter of detail For instance, chlorosis, ulcerative colitis, hæmorrhoids, schistosomiasis, amyloidosis, *Diphyllobothrium latum* infection, trypanosomiasis, Addison's disease, Simmonds's disease, favism, pernicious anæmia, and gastrectomy are given as causes of anæmia in a book purporting to deal only with children's diseases, 62 causes of symptomatic polycythæmia are given, 87 of neutrophilia, 48 of leucopenia, including mustard gas and pernicious anæmia, 67 of eosinophilia, and 37 of granulocytopenia, among which he cites polonium intoxication Yet he fails to give helpful detail thus the diet in cœliac disease is dismissed as "largely of protein and monosaccharides", but a "deleading" diet is given fully The same criticism applies to the section on treatment, for example, treatment of congenital hæmolytic icterus is listed as "Prevent exhaustion Eliminate infections X-ray therapy Splenic ligation Splenectomy"—the most important coming last The illustrations are unworthy of a 1941 textbook and large drawings of how to give rectal feeds, intravenous injection into an arm vein, and other ordinary procedures are out of place There are a few useful sections, but only a persistent reader would have the patience to discover them

Your Mind can Heal You

FREDERICK W BAILES London George Allen and Unwin Pp 242 7*s* 6*d*

THIS is much the sort of book that its title suggests "A little capsule sitting atop each kidney busily manufactures adrenalin which keeps the heart beating These adrenal glands are no larger than one's finger nail" is a specimen of the author's physiology and anatomy, references to the Master Chemist of the Universe, Universal Subjective Mind, the Great Triangle, God's Perfect Idea, give the temper of his psychology His teaching is like what the reviewer supposes that of Christian Science to be, but perhaps there are doctrinal differences

Diseases of Metabolism

Editor GARFIELD G DUNCAN, professor of medicine, *Jefferson Medical College, Philadelphia* London W B Saunders Pp 985 60*s*

Professor Duncan's aims have been "to provide a practical basis for the understanding, diagnosis and treatment of the various metabolic disorders" Fifteen experts, some of them with international reputations, have contributed articles or parts of articles and there is a short foreword by the late Sir Frederick Banting The text covers basal metabolism, the metabolism of carbohydrates, proteins, lipids and minerals, water balance in health and disease, blood diseases in so far as they are diseases of metabolism, the various vitamins and avitaminoses, undernutrition and obesity, and such metabolic disorders as gout and diabetes, the endocrine disturbances have not been included except in so far as they influence metabolic disease The book is good but uneven, some of the pictures are useful and instructive, but there are too many photographs of vitamin crystals and the coloured print of a pancreatic gland containing an enlarged lymph-node and a small islet tumour might well have been omitted The difficult editing has been well done, a little overlapping was almost inevitable Most parts of the book are quite up to date, but the paragraph on refractory rickets is disappointing and there are a few minor passages—notably those dealing with alimentary and essential pentosuria and with the unavailable carbohydrates of the diet—which seem to have been taken from older textbooks The references on the whole are adequate, American publications predominating The book can be recommended to advanced students, lecturers and all interested in the progress of scientific medicine

THE LANCET

LONDON, SATURDAY, OCTOBER 31, 1942

JAUNDICE AFTER YELLOW FEVER INOCULATION

THE Secretary of State for War told the House last week that all the British troops proceeding to endemic areas have been vaccinated against yellow fever since before the war During the war three cases of the disease have been diagnosed in British troops but the vaccine itself has produced no cases of jaundice or other ill effects This question was no doubt raised because of the recent cases of jaundice following yellow fever vaccination in United States soldiers, of which a full official account was published a few weeks ago [1]

Occasional instances of jaundice have been recorded after the inoculation of vaccines and sera in the past but little significance was attached to them until 1938, when MACNALTY [2] and PROPERT [3] observed a number of cases of jaundice with a considerable death-rate in children inoculated with a batch of convalescent measles serum This batch was a pool of the sera of many donors from different parts of the country, none of whom gave any history of jaundice At about the same time jaundice after the inoculation of yellow fever vaccine was reported by FINDLAY and MACCALLUM [4] in England It was shown that this was not the result of the action of the yellow fever virus, and it was suggested that it might be caused by an infectious agent present in the human serum used for suspending the virus, and that this agent was carried in the tissue cultures used for growing the virus [5] A similar occurrence was recorded in Brazil by SOPER and SMITH [6] In England a fresh start was made in November, 1937, with a strain of yellow fever vaccine virus from the laboratories of the International Health Division of the Rockefeller Foundation in New York and the human serum used was heated to 56–60°C for at least 30 minutes before inoculation No cases of jaundice have been attributed to the vaccine in many thousands of inoculations since that time FOX and others [7] have recently reported a similar occurrence in 1939–41 in Brazil Among approximately 107,000 people who were inoculated with the incriminated batches of vaccine in 1940–41 there were 1072 cases of icterus Several batches of vaccine were incriminated with varying percentages of icterus in the groups inoculated with them but the most interesting fact was that the incidence of jaundice covered a wide range of 0–19% in different groups in different areas inoculated with the same lot of vaccine This suggested the probability of some causative factor in addition to the inoculation Another interesting finding was the preponderance of cases among adults The latest addition to this extraordinary series of events is the report [8] of 28,585 cases of jaundice among USA army personnel inoculated with yellow fever vaccine between Jan 1 and July 4, 1942 The evidence points to the same sequence of events and clinical findings as in the previous instances The incubation period ranges from 6 weeks to as long as 6 months, with the majority of cases 10–15 weeks after inoculation The cases greatly resemble those seen in infective hepatitis or catarrhal jaundice, though the incubation period in the latter disease is generally accepted as about 20–35 days One point of note is the presence of urticaria in about 20% of cases, a condition hardly ever seen in ordinary infective hepatitis, that disease, too, is usually a disease of children and adolescents, who seemed more or less immune to the post-vaccination condition in Brazil One of the most notable differences has been the absence of contact cases in places where there were cases of jaundice in the midst of many times their number of unvaccinated or non-icteric postinoculation men The cases which followed the use of measles convalescent serum fit into the same picture as the postvaccination cases except for the two possible contact cases and the much greater severity of the disease But here again the severity has varied widely in the different postvaccination incidents, and if the serum is to be incriminated one must realise that the measles children received several hundred times the dose given in yellow fever vaccine

The last two "outbreaks" tend to confirm the earlier view that the normal human serum used in production was responsible, and in Brazil, where fertile eggs are sufficiently plentiful to make it possible, the serum has been dispensed with and no cases have occurred in 164,000 people vaccinated with the new vaccine The vaccine produced in New York has also been modified, presumably along the same lines All the evidence clearly indicates that the lesion is not the work of the yellow fever virus Pathological material has not revealed any new specific lesion, the main feature being various degrees of subacute and acute necrosis beginning in the central zone of the liver lobule The condition has not yet been reproduced in animals

MASKED HYPERTHYROIDISM

FRANK hyperthyroidism is easy to diagnose, but it was realised as early as 1883 that cases do not always conform to type In that year MARIE pointed out that cases of Graves's disease did not necessarily have goitre or exophthalmos, and CHARCOT, a little later, described formes frustes in which struma, exophthalmos and even tachycardia were lacking These cases of atypical hyperthyroidism have periodically attracted attention, and cardiologists have for some time emphasised the importance of considering occult hyperthyroidism as a cause of cardiac failure with auricular fibrillation It is not only as a circulatory disorder that hyperthyroidism may be disguised, for cases presenting as gastro-intestinal disease have been described, while SHORR,[1] and MCEACHERN and ROSS,[2] have recently drawn attention to a group suggesting myasthenia gravis or progressive muscular atrophy Many cases of masked hyperthyroidism continue to pass unrecognised, and BREIDENBACH and APPELBAUM [3] of New York report 12 further examples

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[1] *J Amer med Ass* 1942, 120, 51

[2] MacNalty, A S *Rep med Offr Minist Hlth, Lond* for 1937

[3] Propert S A *Brit med J* 1938, ii, 677

[4] Findlay, G M and MacCallum, F O *Trans R Soc trop Med Hyg* 1937 31, 297

[5] Findlay G M MacCallum F O and Murgatroyd, F *Trans R Soc trop Med Hyg* 1939 32 575

[6] Soper F L and Smith, H N *Amer J trop Med* 1938, 18, 111

[7] Fox J P, Manso, C, Penna, H A and Para M *Amer J Hyg* 1942 36 68

[8] *J Amer med Ass* 1942, 119, 1110

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[1] Personel communication to Breidenbach and Appelbaum

[2] McEachern, D and Ross, W D *Brain*, 1942, 65, 181

[3] Breidenbach, L, and Appelbaum, E *Ann Surg* 1942, 115, 154

Most of their patients were women past middle age, and initially were misdiagnosed, the diagnoses varying between heart disease, a gastro-intestinal disturbance, diabetes mellitus, hypertension and tuberculosis, the commonest being some circulatory disorder. In all their cases exophthalmos and enlargement of the thyroid were absent or exceedingly slight, and the patients showed neither tremor nor sweating. Nervousness was uncommon. On the other hand, all their cases had lost weight and all complained of muscular weakness, so that even a diagnosis of malignancy was entertained. This important symptom of asthenia and fatiguability is outstanding in the rare group of cases of thyrotoxic myopathy described by McEACHERN and ROSS. In one of these the myogram showed a typical myasthenic response which became temporarily normal after injection of prostigmine and permanently so after thyroidectomy. This asthenia is also a cardinal symptom in the picture of myasthenia gravis and dermatomyositis, and these apparently diverse diseases have other similarities. They all show in the lymphocytic infiltration of muscles an identical histological picture, and, biochemically, an increased creatinuria, which only in cases of thyrotoxicosis and thyrotoxic myopathy can be controlled by thyroidectomy. The significance of this observation is not clear.

The picture of Graves's disease is a composite one with three main groups of symptoms—those associated with the nervous disorder, the group of eye changes, and the group related to hypermetabolism. Each group may occur independently of the others. The nervous disorder is often indistinguishable from an anxiety state unassociated with increased metabolism. Exophthalmos is often seen in a benign form, sometimes accompanying essential hypertension, though as EDEN and TROTTER[4] have lately recalled, lid-retraction is almost pathognomonic of Graves's disease. It is only the signs and symptoms of hypermetabolism that are diagnostic of hyperthyroidism and that thyroidectomy can be certain to relieve.

The cases of masked hyperthyroidism show muscular weakness with hypermetabolism, usually presenting as a form of cardiac failure. The reason for this deleterious effect of hyperthyroidism on the heart remains obscure. It is either some toxic action on the heart direct, or more probably the result of enforced overwork on an already damaged myocardium. It is therefore more often met with in the elderly. Hyperthyroidism plus infection seems particularly overwhelming to the heart muscle. Is this group of cases, where evidence of hyperthyroidism is partly lacking, more exactly described as hypermetabolism?[2] HINTON and his associates,[5] in examining the rôle of iodine in thyroid disease, assume that hypermetabolism may not only occur apart from Graves's disease but is often confused with it. Difficulties in investigation are partly due to the lack of any simple means of measuring the function of the thyroid other than by the indirect method of measuring the metabolic rate. If hypermetabolism is distinct from hyperthyroidism, the inferences drawn from this procedure are obviously fallacious. Since the thyroid is largely concerned with iodine metabolism, investigation of that function might throw direct light on thyroid disease, and it is largely the technical difficulties of blood iodine estimation that have prevented more work on these lines. HINTON and his colleagues have done a large number of blood-iodine estimations and in the great majority of their cases of recent exophthalmic goitre high values were encountered. Unfortunately they have done no measurements on cases of masked hyperthyroidism. They consider that high values in cases of non-thyroid disease always indicate undue exposure to iodine. Possibly if estimations were limited to the organic iodine fraction of the blood, a *fraction presumably representing the thyroid hormone,* results might be more accurate and the confusion that exists between hypermetabolism and hyperthyroidism would be dissipated. Till then the occurrence of masked hyperthyroidism must be borne in mind, more particularly because as a rule surgery can effect a cure.

INDUSTRIAL HEALTH IN 1941

SIR WILFRID GARRETT is still convinced that if maximum production is to be obtained the general requirements of the Factories Act must be observed. In his report[1] he assumes that accident prevention, proper ventilation and heating, and reasonable hours of work are essential to the war effort, although he has to spend a good deal of time in convincing other Government departments that this is so. His own department is giving much thought to the immediate well-being of the workers and personal relations in the larger factories. By the end of the year under review, with the help of advisers expert in domestic science, catering and nutrition, canteens had been provided in 6592 places subject to inspection by the Factory Department. These advisers spent their time visiting canteens and giving detailed advice on equipment, staffing, menu-planning and the nutritional problems of big-scale cookery. The department itself was kept busy at first with getting the canteens built and equipped, but now there is time to see that the meals are of the right quality and that the best use is made of the raw materials. Dr J C BRIDGE, senior medical inspector, ascribes the maintenance of the workers' health in large part to the canteens, although he is not quite happy about the vitality of workers in the heavy industries. No statistical evidence has been produced in favour of the wholesale distribution of synthetic vitamins, and Dr BRIDGE thinks the money spent on these would be better employed in cheapening canteen meals. In general, women have not suffered from the new factory jobs they have undertaken, but he is against employing women who have had children on work that requires much strain on the abdominal muscles. He has been struck by the way women unused to industrial life fit into a team which includes men, and how readily the men lend them a helping hand. The temporary increase in the hours of work of young persons has had no harmful results as far as direct evidence is available. Much good has come of the Rest Break Houses Scheme which provides tired workers with a holiday in the country at low cost. The scheme is not intended for convalescence after illness but for preventing a tired worker from becoming ill. Dr BRIDGE would like this organisation to be better known and adopted more widely. A similar scheme for civil defence workers, sponsored with great devotion by the war organisation of the Joint Red Cross, is commended on a later page by Lord HORDER to medical officers of health

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[4] Eden, K C and Trotter, W R *Lancet*, Oct 3, 1942, p 385

[5] Hinton, J W, Ekerson, E B and Bruger, M *Ann Surg* p 206

[1] Annual Report of the Chief Inspector of [illegible] 1941 Cmd 6397, HMSO, 6d

Turning to specific industrial diseases we note that only 59 cases of lead poisoning were reported, the lowest figure since notification became obligatory There were more cases of aniline poisoning or so-called anilism, many of them among TNT workers In addition there were 41 cases (12 males, 29 females) of toxic jaundice caused by TNT, and of these 12 (3 males, 9 females) were fatal The high proportion of women may not be due as much to susceptibility as to the greater number exposed to risk of poisoning One woman died from liver damage set up by exposure to the dust or fume of chlorinated naphthalene wax There were 22 cases of anthrax with 3 deaths, against 37 and 5 in the previous year, a reduction probably due to the restricted import of infected material The only case of industrial phosphorus poisoning since 1919 was reported during the year Gassing accidents were 200 more with 10 more deaths than in 1940, the increase being greatest in CO poisoning Blast furnaces, the common source of such poisoning, were less guilty than usual but there were 56 more cases with 9 deaths from coke braziers, exhaust gases and similar risks SIR ERNEST GRAHAM-LITTLE has called the attention of the Commons to a rise in the number of cases of industrial dermatitis (as shown by a system of voluntary notification) from 2000 in 1938 to 5000 in 1940, the increase is not surprising in view of the numbers employed and the greater use of irritating material DR BRIDGE maintains that few workers should suffer were proper care taken of the skin He thinks that effective and supervised washing will prove to be the essential factor in prevention

TUBERCULOSIS IN EIRE

A LONG STANDING tradition has it that the Irish are particularly susceptible to tuberculosis, and the tradition is supported by two facts The first is that the tuberculosis death-rate in Eire is relatively high—123 4 per 100,000 in 1939 compared with 69 5 for England and Wales The second is that in Irish communities living abroad the death-rate from tuberculosis has been found to be significantly higher than in the rest of the population, this observation has been inadequately investigated Before accepting so vague and unanalysable an element as racial susceptibility, other points of comparison must be fully determined, such as social conditions and the frequency of primary infection in childhood and adolescence In the presentation of the American figures,[1] the possibility that economic differences were responsible was not eliminated BRADBURY's[2] figures for Tyneside are impressive, and environmental factors there were taken seriously into account, but the question of primary infection was not investigated

Turning then to the high tuberculosis mortality in Eire, the problem reveals itself as bristling with complexities To compare fairly, for instance, the death-rates in Eire and England, it is essential to know whether standards of living, of housing, medical habits of the people (readiness of the patient to consult), incidence of infection, and development of the medical and especially of the tuberculosis services are comparable in the two countries In a recent analysis, DILLON[3] has dealt with some of these factors The mortality figures show a high prevalence, and especially a well-marked slowing down in the rate of decline, as opposed to the acceleration of the decline which took place in other countries up to the outbreak of war Thus for a total of 19 other countries the mean decline of the death rate was 3 2% per year during the decade 1927–37, compared with 2 0% in the preceding 15 years In Eire the decline has, on the contrary, been strikingly less—1 5% each year in 1927–37 against 2 1% for the earlier period The result is that the tuberculosis death-rate in Eire was in 1937 higher than in all but one of the 19 other countries whose figures are available DILLON stresses two main points anti-tuberculosis services and economic conditions He finds that the decline has been very definite in those countries whose anti-tuberculosis services were extensively reorganised in the postwar years In Northern Ireland, where such reorganisation took place, the death-rate fell from 141 in 1927 to 97 7 in 1937 while in Eire it fell from the same high level (145) only to 123 4 But in Eire DILLON says, "the reorganisation has been deplorably insufficient, and modern diagnosis and treatment are available to a minority only " He describes at length the paucity of the services available in Eire for the tuberculous patient, and makes suggestions for their improvement His description of the existing services is amply confirmed by other contributors to the symposium in which his study appears The factor of economic conditions also looms large in the analysis of figures given During the period 1927–37 primary foodstuffs became dearer in Southern than in Northern Ireland There was also a considerable difference in the purchasing power of the unemployed families, the allowances to both insured and out-of-benefit workers in Northern Ireland were on a much higher scale than in the South In fact the relative excess of mortality in Eire appears to have been mainly experienced by the unemployed section of the population, since the mortality among insured males is less than half that of the general male population between the ages of 16 and 25 Economic distress, overcrowding, badly organised health services for those who are completely dependent on them, are sufficient in themselves to account for a high mortality-rate in tuberculosis

The incidence of tuberculous infection has been studied in small tuberculin surveys carried out in Dublin[4] and in a rural district [5] They seem to indicate, as do the figures of the Prophit Tuberculosis Survey in England,[6] that the incidence of infection in Irish children and adolescents is relatively low This results probably in a relatively high rate of primary infection among young adults and a high mortality The prevalence of tuberculous disease in Eire is difficult to determine, since notification there is compulsory only for cases with positive sputum The full extent of the problem has then yet to be assessed, but on the strength of the figures available there is clearly scope in Eire for a vigorous anti-tuberculosis campaign in case-finding, economic provision, and extension and development of the tuberculosis services While Eire has at her disposal a whole armament of effective measures still to be used in the anti-tuberculosis campaign, speculation about the hereditary factor must remain in the background

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[1] Cobbett L *Tubercle*, 1924 6 1 Drolet, G J in Goldberg's Clinical Tuberculosis, Philadelphia 1935
[2] Bradbury, F C S *Nat Ass Prev Consumpt*, *Lond* 1933, 19, 108
[3] Dillon T W T *Irish J Med Sci* July 1942 p 221
[4] Price D *Ibid*, March, 1939 p 124 July, 1941, p 241
[5] Crowe M P *Brit med J* 1942 i 226
[6] Ridehalgh, F *Lancet* Oct 17, 1942, p 463

Annotations

SKIN PIGMENTATION AND RADIOSENSITIVITY

FAIR skin is known to react to sunlight more readily than dark, and this is true of both the early inflammatory response of sunburn and the later and graver, though rare, sequel of cancer There has, however, been no obvious reason to suspect that a lack of pigment would influence the cutaneous reactions to X or γ rays Harvey[1] of Edinburgh, however, in an informative review of the effects of irradiation on the skin, says that "Swarthy individuals appear not to be highly radiosensitive, just as they are not highly tar or paraffin sensitive" This suggestion is worthy of further inquiry, for if confirmed it will be of fundamental importance in radiotherapy Writers on experimental cancer do not seem to give a clear answer to the question whether neoplasia can be more readily induced by chemical carcinogens in albino than in coloured mice, and radiologists differ on the relative sensitivities of fair and dark patients to the more immediate reaction to X or γ rays Two circumstances might lead to an erroneous belief that the fair are more susceptible than the dark to carcinogenic agents First, tar workers become sensitised to the action of sunlight, sometimes to an advanced degree This increased sensitivity would probably be most pronounced in the fair, and it might be misinterpreted as due to the tar alone and not, as it possibly is, to the greater dose of ultraviolet radiations which the unpigmented skin has to accept Secondly, when we consider cancer, experiments leave little doubt that one factor may be added to another to increase the likelihood of ensuing neoplasia The carcinogenic effects of sunlight may be added to those of tar in causing cancer of the skin, in which event the fair would show a higher incidence of neoplasia than the dark Such an increased incidence would be most pronounced and perhaps confined to the parts exposed to sunlight, and it would be wrong to attribute the result to an exaggerated susceptibility of the fair to the carcinogenic action of tar The problem, however, is not to be solved by argument without accurate data

HOSPITAL REPORTS

IN England, hospital reports are mainly the prerogative of the London hospitals Some of us vexed our minds in the days of peace, and will do so again when those days return, over the raison d'etre of such publications, and the form they should take They may be divided into two broad categories those which contain original articles, and those which collect together the papers published elsewhere by members of the hospital staff Of the former type *Guy's Hospital Reports*, which started in the early years of the nineteenth century, are perhaps the best known example, though St Thomas's and St Bartholomew's publish similar types of reports The London and the Middlesex Hospitals issue collections of published papers, actual reprints being bound loosely within covers The *Brompton Hospital Reports* are intermediate in format and character, consisting mainly of papers already published, reset in the form of a book, but occasionally including papers which have not previously appeared, along with brief tabular summaries of aspects of the work of the hospital Sir Robert Hutchison[2] has drawn attention to the mass of medical journals which before the war were threatening to make life unbearable for the conscientious doctor, and it may be asked whether hospital reports justify their place in this gargantuan collection For the dissemination of knowledge it seems better to publish material in a journal which has a large circulation Moreover if the editors of reports have to spend much time in persuading their colleagues to write papers, and if these when written are mere pot boilers, then practice is falling short of principle Collections of papers which have appeared elsewhere, though they have not this weakness, may trouble the librarian, because he never knows whether to index them as a separate volume or as separate papers, but they do let the world know what work has been done in the hospital

Reports might serve a useful purpose in two forms either as statistical tables based on all the cases passing through the hospital during the year, and giving details of diagnosis, prognosis and results of treatment, like the old *St Thomas's Hospital Reports*, or as a series of papers based on cases which have been in the hospital—dealing, for example, with the prognosis of ulcerative colitis, or the comparative results of different forms of treatment of thyrotoxicosis, or the incidence of malnutrition in patients suffering from pneumonia These papers would be written largely by registrars or junior members of the staff, with the cooperation of the senior members, and would provide information not otherwise available They would also stimulate careful case recording and filing, and encourage junior members of the staff to carry out adequate investigation There have in the past been periods of lustre in this or that medical school when the genius loci has transcended its walls and become an inspiration to the whole of medical thought Records of such periods have a proper place in the archives of medicine

CAUSES OF BLINDNESS

IN 1935 there were 75,810 people on the Register of Blind Persons in England, Wales and Scotland, 70% of this number being over the age of 50 and 80% being unemployable This figure does not represent the whole of the blind population, for registration of the blind is not compulsory and is only undertaken when the sufferer seeks help, whether as a blind pension, increased public assistance, technical training, free travelling facilities, or wireless licence The standard of blindness chosen is that they shall be "too blind to perform work for which eyesight is essential," and in practice this is equivalent to a vision of less than 3/60 in each eye, or if the visual fields are constricted of not more than 6/60 in each eye A regional clinic for the certification of blind persons in Glasgow and south west Scotland was established in August, 1929, and a detailed review of the information collected has now been presented by Marshall and Seller[1] Before the establishment of this clinic, admission to the Register of Blind Persons was allowed on the evidence of a certificate from a registered medical practitioner, who had not necessarily any specialist ophthalmic knowledge The information gained from this register was too inaccurate to be of any use, and it was to put an end to this unsatisfactory state of affairs that the clinic was started The examiners, four ophthalmic surgeons, work in pairs Two sessions are held each week, at each of which about 12 cases are seen All data collected at these sessions are recorded and tabulated according to the Hollerith system In all, 3219 blind people were examined, and all relevant details recorded In assessing the importance of different causes it was found that a different result was obtained if the second eye was taken as the cause of blindness than if the first was chosen The results published are on the basis of the second eye, and thus if one eye is blind from myopia and the second eye is blinded by injury that person's blindness is classified under injury They found that 16 8% of all blindness was due to cataract and that this was the most important single cause This is unexpected, for if that is the only trouble it is eminently suitable for operation and restoration of useful vision The report goes on to say that of the 540 cases of cataract examined there was a prospect of restoration of useful vision in 306 cases (56 7%) Of the remaining 234 cases, 133 had received treatment which had failed to restore vision, while in a further 96 the treatment was incomplete It is remarkable that 306 people should have allowed themselves to become so blind as to seek for help from the state without, apparently, seeking expert medical advice One is also left wondering why treatment failed to restore vision in 133 cases If the cataract was removed and a retinal lesion prevented useful vision then the cataract was not the cause of blindness Perhaps these 133 cases represented operative failures, with perhaps a few in which congenital cataract had resulted in amblyopia A close second is myopia, with 526 cases (16 3%) The actual cause of blindness in this condition varies with the age of the patient—retinal detachment in the young, choroido retinal degeneration in the middle aged, and cataract in the elderly The sexes were equally represented, and there was not the preponderance of injury among the myopes that one might have expected, nor was myopia more common in one occupation than in another The majority of myopes attending the clinic had more than 10 D of myopia Venereal diseases took third place as a cause of blindness, accounting for 13 9% of the whole Of this number, 99 (3 0%) were due to ophthalmia neonatorum, and 348 cases (10 8%) to syphilis The Kahn reaction was carried out on at least two-thirds of the patients attending the clinic, and where positive was confirmed by the Wassermann Among the blind in this analysis 562 patients, or 17 4%, were syphilitic This is the incidence of syphilis in the blind population and not the number of cases blinded by syphilis The actual eye defects were chiefly interstitial keratitis in the young and optic atrophy in the old The incidence of ophthalmia neonatorum and congenital syphilis have fallen in Glasgow of late years in a remarkable fashion, the former from 5 45 per 1000 births in 1921 to 1 40 per 1000 in 1936, and the latter from 11 84 per 1000 in 1922 to 1 62 per 1000 in 1937 The remaining causes were chronic septicæmia—chiefly iridocyclitis—10 7%, glaucoma 8 7%, congenital anomalies 7 45%, and injuries 6 4% A fairer picture of the disability produced by the different causes of blindness is attained by estimating the "patient years" of blindness Cataract thus falls from 17% to 5% of the total and ophthalmia neonatorum rises from 3% to 10% Unlike in most continental countries, blind pensions are given here whether, in the opinion of the examiners, the blindness is curable or not The compilers of this report thought that this was one factor which accounted for the large number of people who, although advised that treatment might remove them from the blind category, did not in fact avail themselves of this advice

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[1] Harvey, W F *Edinb med J* 1942, 49, 529
[2] See *Lancet*, 1939, ii, 1059

[1] Marshall, J and Seller, H E *Brit J Ophthal* 26, 337, 38[illegible], 1[illegible]

BLOOD-SUPPLY OF NERVES

It has often been assumed that the normal activity of the peripheral nerves is independent of their blood-supply, but the work of Lewis and his school has established close relationship between ischæmia and nerve function From the review by W E Adams[1] of the widely scattered and little known writings on this branch of anatomy it emerges that in every nerve there is an extensive intraneural plexus whose meshes extend into the endoneurium in relationship with the nerve-fibres A distinct macroscopic longitudinal arterial pathway is formed by primary anastomoses between the ascending and descending rami of successive nutrient arteries Such a blood-supply is fundamentally regional and follows a common pattern throughout the mammals The vessels have a well-developed muscular tunica media, from which it may be inferred that they are themselves subject to nervous control But as yet we know little concerning this, though sympathectomies have been widely practised on the empirical assumption that vasoconstriction is thereby inhibited Experimental devascularisation of nerves dates back to 1878, when Mayer found that the treated nerve lost its excitability in 15–30 minutes, and Okada claimed in 1905 that degeneration of the sciatic nerve can be produced by ligating the inferior gluteal artery It appears however that ischæmia need not be complete in order to produce significant effects on the transmission of the nerve impulse Such effects comprise widespread disturbances of sensibility and of motor activity The larger, rapidly conducting, fibres seem to be first affected, and the ischæmic paralysis is completed by the involvement of the slow-conducting fibres These considerations have an important bearing on such clinical conditions as the peripheral neuritis of arteriosclerosis, diabetes mellitus, and the rarer examples of periarteritis nodosa and amyloid disease which involve the nerves, also the circulatory disorders resulting from long exposure of the extremities to severe cold

ELECTROCARDIOGRAM IN TRAUMA OF THE HEART

Contusion of the chest may temporarily or permanently derange the heart, even though the clinical signs and symptoms of cardiac involvement are slight In the recognition of such complications the electrocardiogram is often helpful, but Barber[1] points out that the record should be obtained as soon as possible after the accident if temporary effects are to be studied The electrocardiographic changes seen consist principally of alterations in the T wave, a "coronary thrombosis" type of curve various grades of heart-block and certain arrhythmias Beck[2] noted prominent T waves as well as the typical changes of coronary thrombosis, findings which he also obtained in dogs after contusion of the myocardium Transient changes in the shape of the T wave have also been recorded by Kissane[3] and Warburg[4] and the latter has reported auricular fibrillation In dogs Kissane has produced varying grades of auriculoventricular heart-block, and Coffen[5] has reported its occurrence in man Anderson,[6] in reporting a case, describes inversion of the T wave and RT deviation, changes which had not altogether disappeared a year after the accident although the patient had made a complete clinical recovery In their experiments on blast Zuckerman and his co-workers[7] found only transitory changes in the electrocardiograms of rabbits which recovered, these consisting of alternation of the QRS complex, though in one animal the P–R interval was prolonged Among 33 patients admitted to hospital on account of a severe blow over the front of the chest or some crushing injury of the thorax, in all of whom examination was completed within 48 hours of the accident, Barber[1] found one case of partial heart-block, one with sinus bradycardia, one with slurring of the R waves, one with increased amplitude of the T wave, and 4 with inversion or flattening of the T wave These changes in trauma of the heart are presumably due to one or more of four mechanisms The contused area of myocardium, with or without hæmorrhage, will either affect conductivity in the myocardium in the same way as an infarct does, or will directly interfere with conductivity in the bundle of His If the damage involves the pericardium changes in the latter part of the ventricular complex will ensue The other possibility is that suggested by Schlomka[8]—that the trauma may cause

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[1] *J Anat* 1942, 76, 323

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[1] Barber, H *Brit Heart J* 1942, 4 83
[2] Beck, C S *J Amer med Ass* 1935, 104, 109
[3] Kissane, R W Contusion of the Heart, Columbus, 1937
[4] Warburg, E Subacute and Chronic Pericardial and Myocardial Lesions due to Non-penetrating Traumatic Injuries, Copenhagen 1938
[5] Coffen, T H *Amer Heart J* 1930 5 667
[6] Anderson, R G *Brit med J* 1940 ii, 307
[7] Krohn, P L, Whitteridge, D and Zuckerman, S *Lancet* 1942, i, 252
[8] Schlomka, G *Ergebn inn Med Kinderheilk* 1934, 47, 1

sufficient spasm of the coronary arteries to produce an infarct of the myocardium The practical implications are clear Every patient with a severe injury involving the thorax should have an electrocardiogram recorded as early as possible and certainly within 48 hours of the accident Even though the correlation between clinical and electrocardiographic evidence of cardiac damage in these cases is not very close, most cases with definite cardiac damage will show some electrocardiographic changes, and since the clinical signs of such damage are often masked by the more direct effects of the accident, evidence which permits of direct diagnosis of involvement of the heart will prove invaluable Any patient in whom such evidence is obtained should be treated, so far as the heart is concerned, on the same lines as a patient with coronary thrombosis In this way the mortality from rupture of the heart, which is liable to occur about a fortnight after the accident, will be reduced, and the risk of a cardiac aneurysm developing will be considerably diminished

MECHANISM OF CONVULSIVE THERAPY

THE last twenty years have brought a succession of physiotherapeutic methods for the treatment of mental disorders—insulin therapy by Meduna, cardiazol treatment by Sakel, electric shock therapy by Cerletti and Bini, and prefrontal leucotomy by Moniz There has not yet been time for any final assessment of their relative efficacy, but it seems that insulin is to be preferred for the treatment of recent cases of schizophrenia, convulsive therapy and particularly electric shock for the endogenous affective psychoses, and prefrontal leucotomy for obsessional and anxiety states and possibly for long-standing chronic schizophrenia All these methods rest on a more or less empirical basis and little is known about how they effect improvement, nor have they yet thrown much light on the nature of the pathological processes underlying the various psychotic syndromes Two papers have recently appeared bearing on this last problem Heilbrunn and Weil[1] found histological evidence of multiple small hæmorrhages within the brain and spinal cord and their meninges in rabbits subjected to electrical shock, and they raise the question whether similar damage occurs in man during electric convulsive therapy In discussing their paper Neymann rightly points out that the currents employed by Heilbrunn and Weil are proportionally much more intense than those used in the treatment of human beings, and that whereas more than half the animals showed subsequent paralysis of the hindlegs no case of serious paralysis in man has yet been recorded It is therefore doubtful whether the findings in these experiments have any bearing on the mode of action of electric shock therapy Levy, Serota and Grinker[2] investigated the electroencephalograms of 23 patients treated by convulsive therapy "Abnormalities" suggestive of disturbed cerebral function were found in 50% of the post-convulsive records, and in addition changes in intellectual function were found in 45% Both the electroencephalographic and the intellectual disturbances were only transitory, and disappeared sooner or later in all cases Furthermore, clinical improvement and recovery showed no direct correlation with these observed alterations in cerebral function It is not possible with our present knowledge to draw any definite conclusions from these findings, the electrophysiologists are extremely cautious in their interpretations of the abnormalities recorded by the electroencephalogram Recent work, as yet unpublished, shows that the occurrence of slow diffuse waves in any record is to a large extent a correlate of age, being extremely frequent in childhood and becoming increasingly rare with advancing age Two other factors of importance in determining the frequency of abnormal findings are CO_2 tension and the blood sugar, though many other factors play a minor part Convulsive therapy may act by temporarily damaging part of the cerebral cortex, or by disorganising its functions, so removing cortical inhibition Indirect support is given to this view by the beneficial effects resulting from section of the prefrontal tract by Moniz's operation, but it must as yet be regarded as purely hypothetical

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1 Heilbrunn, G, and Weil, A *Arch Neurol Psychiat* 1942 47, 918
2 Levy, N A, Serota, H M and Grinker, R G *Ibid* 1942, 47, 1009

INFANTILE CIRRHOSIS OF THE LIVER

CIRRHOSIS of the liver is rare in European infants but prevalent among Indians of all social grades in overcrowded and damp districts The familial incidence, A E Sundareson[1] suggests, may indicate the passage of a cirrhotogenic factor from the mother to the fœtus He has demonstrated experimentally that liver poisons such as carbon tetrachloride can diffuse through the placenta in the rat and produce changes in the liver of the fœtus without affecting the permeability of the placenta itself It is notable, however, that breast fed infants are unlikely to develop cirrhosis, which suggests that the condition is postgenital Krishna Rao[2] quotes the case of twins, one breast fed and one fed on cow's milk, the bottle-fed child developed cirrhosis and the other did not Rao describes the clinical and pathological findings in the condition and suggests two ætiological factors devitalisation of the liver by a gastro intestinal upset due to cow's milk, and a secondary *Bacillus coli* infection He claims to have grown *B coli* from the livers of 4 cases in which autopsies were done ½–10 hours after death In 20 cases of sudden death from other causes he was unable to demonstrate the bacillus in the liver Bacterial invasion of tissues after death is likely to be rapid in India, and these findings in so few cases must be regarded cautiously, although the associated leucocytosis and the polymorph infiltration of the liver found in infantile cirrhosis suggest an infection *B coli* have also been isolated from the urine of affected children, but may have no ætiological significance, they are found often enough in European children without cirrhosis Diet seems to play a part, 98% of cases are found in vegetarian families in which, after weaning, the child's staple food is rice A R Rich and J D Hamilton[3] claim to have produced cirrhosis in rabbits on a diet deficient in vitamin B, but their experiments are invalidated by the susceptibility of rabbits to coccidiosis, which favours the development of fibrotic changes D P Earle and J Victor[4] have induced cirrhosis in rats by feeding them with cystine and have shown that choline given at the same time prevents the cirrhotic changes Choline also prevents fatty infiltration of the liver, which according to modern workers precedes the development of cirrhosis Other workers have found diplococci in the liver in cases of Hanot's cirrhosis, and Weaver produced proliferation of the bile ducts after injecting guineapigs with *B coli* It seems probable, from the evidence, that more than two factors are at work in infantile cirrhosis Dried milk preparations have certainly done much to reduce the incidence in India

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1 *J Path Bact* 1942, 54 289
2 *Proc Ind Acad Sci* 1941, 14, 310
3 *Bull Johns Hopk Hosp* 1940, 66, 185
4 *J exp Med* 1941 73, 161

Dr William Lyle has been returned unopposed as one of the representatives in the Northern Ireland parliament of the Queen's University, Belfast

DIPHTHERIA IMMUNISATION —Of the 1440 local authorities in England and Wales 685 have reported to the Ministry of Health that up to the end of last June half or more of their children aged 5–15 had been protected But only 247 authorities were able to report that at least half the children in the age group 1–5 had been inoculated

HEALTH OF THE CIVIL DEFENCE WORKER

THE MOH'S OPPORTUNITY

LORD HORDER G C V O, F R C P
CHAIRMAN OF CIVIL DEFENCE WORKERS HEALTH DEPARTMENT

THE winter ahead of us, with its perhaps critical phase of the war, presents a new health problem of great importance—how to keep fit the large standing army on the Home Front which civil defence has mobilised. That this army must maintain its health level at all costs is obvious, but it must be recognised that, unlike the other arms of HM Forces, there is no coordinated or official system of medical oversight and welfare by which this may be done. The CD army, an "army of amateurs," was recruited without any routine medical check in the first instance and has been totally untrained for those extremes of mental and physical endurance that it has been called upon without warning, to bear during the Battle of Britain and ever since all over the British Isles. Despite these handicaps, after extremes of terror and horror, their service switched to endless waiting and with many fretful reorganisations, these men and women of middle age have proved themselves "good stuff" and worthy of all the support they can be given.

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While in theory the health of the great regiment of CD workers remains the responsibility of the general practitioner, who is usually the panel doctor, the semi-regmented state of these citizens actually causes to fall upon the already overburdened MOH and his staff a great deal of this vital medical oversight. It was upon the MOH that much of the work of recruitment and initial training of a section of the CD workers devolved and it is the MOH who now has to face the psychological factor of tension in waiting allied to its paradoxical opposite, extreme boredom. I have long been an advocate for increases in the MOH's medical staff. Only in that way can he fulfil these important new functions. These include checking up the health of all CD personnel under his control. The officers in charge of personnel should know their men and women and should have their confidence. This puts them into the position of being able to report to the MOH on each individual as necessary. In the early stage of some disability or other this cooperation will not only assist the individual, it will save the service from wastage of time and money. Even more important, it will save the morale of the post from insidious disaffection and sometimes also from the contagion of malingering as the only relief from an intolerable situation. If the MOH, the key man, is not prepared to exercise this function, his colleague the controller and himself will be left inevitably to struggle with depleted posts and with general dissatisfaction amongst those whom he has not sufficiently cared for nor controlled.

Now is the time to take stock of the measures that are available to the controller on the advice of the MOH for the prevention of winter sickness amongst his personnel and here I can become constructive, and not merely admonitory, in my comments. It has been my privilege to be associated as its chairman since its start with one of the most progressive of the war-time activities of the War Organisation of the Red Cross and St John, the newest department of this great body, the Civil Defence Workers Health Department. The aim of this young and vigorous branch is to prevent illness, to avert breakdown and to assist CD personnel of all services and both sexes to be and to keep "fighting fit." To achieve this end two facilities are offered free to selected cases first, recuperative rest in rest-houses and in private hospitality, for men and women who can be saved by a brief, carefully arranged rest, secondly, and more important at this moment, convalescent treatment in homes run by the Red Cross and St John for men and women either after hospital treatment or if in the opinion of their doctors they would benefit from such treatment prior to succumbing to "illness" when it threatens them. This work has been going on steadily for some fifteen months it has spread all over England and Wales, the machinery is so simple, the cooperation with the authorities interested so complete and so easy that it has succeeded even beyond our own expectations wherever it has been set in action.

* * *

It is essential that medical officers, burdened as they are by so many cares, should realise that here is a service that will involve them personally in no new administration nor the scheme-making authorities in any expenditure, and that will militate against absenteeism and malingering as nothing yet has done. It does, however, entail the modern outlook, the preventive-medicine viewpoint, and it does entail a shouldering, by the MOH concerned, of his responsibility towards the personnel in his charge. His only additional duty is to acquaint himself with the facilities offered and to see that his officers make themselves cognisant of these facilities and make it easy for their men and women to avail themselves of them.

In a certain city in the Midlands, noted for its progressive viewpoint the use of this service of convalescent home accommodation was put to the director of this department very much better than we have yet put it for ourselves. An official declared that if it be necessary—as it most undoubtedly is—to rest and refit machinery, the same necessity exists to rest and refit the human beings whom we are running quite as hard as we run machines and with a great deal less care than we give to the machines. We "service" our machines because they cost money but we are apparently content to permit our human material to "overrun" until it crashes and then we are usually content to let it somehow refit itself during the 13 weeks that, at this stage of "disgruntled" ill health, it bitterly regards as due to it from an authority that did nothing to prevent the crash.

This department, with its careful check-up of each individual applicant, its allocation of each patient to suitable accommodation and its essential human and personal approach to the problem of each worker, constitutes a powerful ally to the MOH. In London (Region 5) this machinery has been perfected. The man sickening for a preventable ailment or the post-illness case is sent, with a leave permit and his own doctor's certificate, to 6, Cadogan Square, or, if he cannot come in person, his case is referred by letter with the necessary two papers. That is all. Thereafter the department's skilled staff takes over if the case can be dealt with suitably by the means at its command, he is at once allocated to a suitable convalescent home. The whole process takes some 48 hours normally, but cases can be got away in less, and there is no charge of any sort. That week, that fortnight, spent under skilled and careful supervision may, and nearly always does achieve one of two things. *the potential* patient is saved a serious illness if he has been taken as a preventive case, or, if he needs recuperation after an illness or injury, he returns fit for service in a very much shorter time than if he had returned to his post only to go sick again. Nor is the intangible, the psychological, side forgotten sick men do not get well if they worry, so the assistance board has seconded an officer to see, in confidence, each patient and make sure that that man or woman is, as far as possible, free from financial or private worry about pay or dependants.

* * *

There is another, very important point, and it is well to face it civil defence personnel are often disgruntled—"browned off" is a term often used of, and by, them. The very fact that they are taken into convalescent homes on an equality with HM Forces, that these men and women are treated as soldiers (which they are) and afforded facilities shared by sailors, soldiers and airmen (and women of the services) makes for esprit de corps and for a feeling of fellowship in the war effort that nothing else can give them at this time. This convalescent accommodation is given to civil defence by arrangement with the Ministry of Health, this work has not only the blessing but the active help of both the Ministry of Health and the Ministry of Home Security and also of all regional commissioners and other CD authorities concerned. The department uses accommodation in 33 convalescent homes in 8 regions of England and Wales and has some 13 rest-houses for recuperative rest. It is being used increasingly by progressive medical officers everywhere.

I end as I began, by pleading with medical officers who have the great responsibility for the Home Front this winter, that they look to all sources of help for the health of their depleted and middle-aged civil defence personnel. A good average level of health is the most potent factor in morale and, as far as the individuals *in ARP* services are concerned, the fact that their local authority does look to their welfare and does take the trouble to explore and make known such services as I have here described, *health* services and not *illness* services, may make the vital difference in their winter's work

A high sickness rate is avoidable A bad absentee record, a bad malingering record, a bad sickness curve is a personal reproach to the MOH concerned if he has not explored all the means of preventing these things that are now ready to his hand, and has not activated the controller to make the utmost use of them

In England Now

A Running Commentary by Peripatetic Correspondents

Sanderson is dead He had spent two and a half years in our hospital, first with surgical and then with pulmonary tubercle We see so few such cases that the PM was crowded , it made you wonder how the surgeons and physicians had kept life so long in his exsuccous corpse It made me think too of the only other adult I ever saw dead of tuberculosis She was a Navaho Indian, one of those fifty thousand pure-bred Indians who live in the hot dry summers and snow-cold winters of Arizona and New Mexico Just before she died they had a nine-day night chant for her The Indians came riding in on their brown horses, and the deer-eyed women cooked for them In the evenings and through the night the Singers went through the long songs of the Navaho

With dew about your feet may you walk,
With bright clouds above your head may you walk,
At dawn, in happiness may you walk,
In the beauty of evening may you walk,
In old age walking the beautiful trail

up to the final fourfold repetition of

In beauty it is finished

Outside, through the open door of the cup-shaped hogan, she could see the innumerable stars of the Arizona night Round her were all her friends, each one intent on thoughts of happiness and beauty for her, so that the thoughts might somehow make her feel well The gods came to visit her—Dawn-boy and Pollen-girl, Nayemezgani the Slayer of Enemy Monsters By day she saw the sunlight on the red and golden rocks Soon after the Singing, she died It seems that civilisation has taught us to postpone death , but both life and death are enfeebled in the process

* * *

To any doctor of my seniority who finds doctoring has lost its charm I can recommend the experience that has come my way in the course of war service As the resident surgeon at an EMS hospital with no houseman, I have resumed the rôle of casualty house-surgeon in which I started professional life 35 years ago In that period there has been sandwiched a slab of active service in the old war between slices of general practice During the nine months of the blitz we admitted from the surrounding densely populated area a large number of air-raid casualties by day and particularly by night, which involved a great deal of somewhat elementary surgery in intensive doses , on the whole the results were satisfactory Since the raids stopped the hospital has become the rendezvous of the local outpatients, who find it too expensive and time-consuming to go to the nearest large general teaching hospital, whereas there is not nearly so long to wait for attention here Having a small X-ray machine, it has been possible to deal with fractures Including those seen in raid cases there have been some 180, of which the most numerous were Colles', ribs, skull, humerus and tibia, in that order, though we have had examples of some of the rarer kinds such as scapula, scaphoid of hand and foot, cuneiform, and transverse process of lumbar vertebræ Like all hospitals we have seen innumerable cases of scabies, and have been fortunate in being able to refer them for treatment to a centre established by the progressive and efficient local authority, which incidentally uses part of the hospital premises for its diphtheria-inoculation clinic Another skin condition that seems to give rise to much lay apprehension is the local œdema produced by mosquito bites, the patient's fear being that the swelling indicates serious blood-poisoning , a little lead lotion and a lot of reassurance rapidly cures both bite and fear Minor burns seem to do best if the raw lesion is sprinkled with sulphanilamide powder under a dressing of sterile soft paraffin When healthy granulations are established, scarlet red ointment rapidly epithelialises the s with a minimum of scarring

The local dogs seem to be very irritable or else the children tease them indiscreetly, and the traditional fear of hydrophobia leads to the bringing in of the most trivial of scratches caused by their teeth There was one dog that recognised the uniform but not the sex of a very indignant postwoman Only one case gave rise to any surgical anxiety and that cleared up when treated as an ordinary septic wound Two popular diversions among the hobbledehoys of the neighbourhood are hair growing and stone-throwing The combination gives rise to awkward moments when a patch of scalp has to be shaved to get at and treat the triradiate, "Isle-of-Man," lacerations that occur when the aim is good enough to score a direct hit The workers at the near-by shell factory have a habit of getting their feet in the way of rolling shell cases which are of the larger calibres, and there are in consequence many bruised feet, some with fractures of metatarsal or phalanges

One serious reflection emerges from seeing many children at all hours of the day and night with little or nothing the matter with them but about whom the mother is scared, through ignorance A favourite diagnosis of the grandmother is convulsions, arrived at by noticing for the first time the natural phenomenon of eye-rolling under the closed lids during sleep There is no doubt that housecraft and mothercraft should be essential subjects for inclusion in the instruction at elementary and indeed all schools for adolescent girls From the angle of the improvement of the health of the coming nation these subjects seem much more important than shorthand or typewriting I commend this thought to those who are planning the curriculum for the extra years when the school age is extended

* * *

English manners have long been a mystery to the foreigner André Maurois, for example, says that in France it is ill-mannered to let a conversation die, whereas in England if you say nothing for two or three years people begin to think what a nice quiet fellow that Frenchman is All the same, as manners go ours are good, even if on absolute as well as relative grounds they can fairly be called mysterious The best example of our national manners I have ever seen was displayed under my nose last Saturday, and I am proud to say I contributed my quota to the whole The carriage was full, the train had begun to move, when the door opened and in leapt three spirited WAAFs The largest made straight for the opposite door of the carriage and tried to open it The train was now moving at 20–30 m p h (full out on our line) and the soldier sitting in the corner said with some (but not much) astonishment "Do you want to open the door?" "Yes," replied the WAAF in firm North Country accents, "Ah do" Nobody said a word We watched with keen but silent interest as the soldier drew back the stiff latch for her and pushed the door open "Oh," said the WAAF, unshaken "I thought it were a corridor train You can shut it up again" Silently the soldier shut the door , and my national manners which had stood up so well to the strain suddenly deserted me "That was uncommonly obliging of you," I said to the soldier "Well," he answered reasonably, "I thought perhaps she wanted to commit suicide"

* * *

Among casualties admitted to a South Coast hospital during a recent air-raid was a man with an injured thigh There was what looked like a wound of entry beneath which a sharp-pointed object could be felt When the injury occurred the raiders had dropped all their bombs on a neighbouring town and were speeding home with their guns blazing The object therefore was not a bomb fragment and was thought probably to be part of a fractured femur X rays however disclosed an unexploded aeroplane-cannon shell 8 by 2 cm with the blunt end lying deeply and the apex tapering to a fine point The wound was dressed and the limb splinted The Bomb Disposal Unit was consulted and the officer in charge visited the hospital and saw the radiograms The shell he identified as of the armour-piercing variety which explodes on impact, and there were dark hints of a subvariety whose explosion is delayed Removal was an obvious necessity, danger or no danger Naturally the patient was left in blissful ignorance The others in full knowledge of the facts got to work without fuss or hesitation. There was none of the Gallic theatrical technique adopted, as quoted in the *Lancet* of Oct. 24 (p. 501) from the *Siecle Médical*, for extraction of a mere explosive bullet. Within half an hour of leaving the ward the patient was back in bed. As the Chairman said two days later at the hospital's annual bazaar, "safely and successfully our surgeon had performed the most delicate and the most dangerous operation of his career." When the operation was nearing completion the face of an assistant surgeon was seen at the theatre door. Asked what the dickens he wanted he replied, "Only to know what my prospects are of promotion to the senior staff." The Chairman informed his audience that the tenets of his profession forbade him to disclose the surgeon's name. Subsequently, having incorrectly been himself designated in the press a surgeon, he has received embarrassing congratulations on his courage and skill, and on his surpassing modesty in not disclosing his own name.

* * *

"Foosh!" said the Surgeon, throwing the latest *Lancet* indignantly on the sofa, "'In England Now,' why not 'In Britain Now'?" "Well," said the Physician mildly, "it's mainly about England, you know. Aren't you Scotch a little too touchy about this?" Despite his mild manner the Physician was well aware that he was dangling a red rag, and our shaggy Highland bull responded as ever to the challenge. He seemed to have realised, however, that his usual explosive tactics were being drawn out for the tonic effect they always had on our little community, and adopted a new line. "Please, do not misunderstand me. I like the English, I admire the English, but I'm not an Englishman, and am quite content not to be taken for one. I am British, and very proud of it. This is a matter on which we feel deeply. There are many differences between the two peoples, whether you like it or not. I am reminded how in my Alma Mater there was a laureation of a distinguished Virginian scientist. The University organist used to play some appropriate tune when each honorary graduand was led up to the Chancellor, and this time he chose an American tune all right, but it was 'Marching Through Georgia,' and it took a deal of explanation later to convince him of his gaffe. Fortunately the Virginian professor, like most Scots, had sufficient sense of humour to appreciate the situation, but the lesson I am trying to drive home is the failure of the organist, and of you people in parallel case, to appreciate that there *is* a situation." The Physician felt it was up to him to return the ball. "But what have you to complain about really? After all, you chaps come down here from your native fastnesses and take all the best ..." "Jobs, I know!" interrupted the Surgeon. "Now that is where you English show how much cleverer you are than we. You trail out the hoary tale of the Scot who only met the 'heids o' the departments,' and hypnotise the unsophisticated Caledonian into believing that he *does* get the best jobs. The fact is that Scots get plenty of the second-best jobs, not because they are as clever as the English but because they are accustomed to work harder, and all the real plums you keep to yourselves, very sensibly, I must admit. Scotland is a poor country, and when any of her sons manages to get a post at £1000 a year he is convinced that he has reached the dizzy pinnacles of real wealth, and is completely satisfied with his position. The true trouble about the Scots is that they are not ambitious enough and are too modest." From this knock-out blow the Physician bravely tried to rally, after being down for at least nine seconds. "But take for example, Sir ..." "No, there is no use citing a few exceptional individuals to prove a general case," said the Scot. "The fact remains my people are too modest, lacking in ambition, and not nearly as clever as you who are able to hold better jobs with far less effort. We have our good points, but we don't blow our own trumpet enough." This stopped the Physician completely, but the Obstetrician gently interjected, "That is because it is not a *British* habit." The Surgeon looked up. "Thanks," he said, "that's better. But I wish that the *Lancet* would have 'In Britain Now.'"

"I will write to the Editor about it," said the Obstetrician.

* * *

Dicta from donors: "I absolutely insist that my blood be used for the Air Force only."—"I hope my blood is not going to be made into that plasma stuff."

MEDICINE AND THE LAW

Fatal Dose of Paraldehyde

AN inquest at Swindon last month investigated another fatal case of overdose of an anæsthetic before operation. The patient, a boy suffering from catarrh, was sent into hospital. X-ray examination indicated a risk of deafness; an operation for widening the nasal passage was advised. The assistant medical officer wrote out clear directions for the sister; the anæsthetic was to be half a drachm of paraldehyde per stone body-weight plus half a drachm. The sister, a state-registered nurse who had qualified in 1929, retired on her marriage in 1934, and returned to nursing in 1940, was described as careful and competent. Unfortunately she read "ounces" for "drachms." It seemed that she had no previous experience of administering paraldehyde. There was evidence that she had been worried at the time by bad news of the illness of her husband and had applied for leave to go to him, but was asked to wait a few days as the hospital was so short of trained nurses.

The anæsthetic was given and the operation was skilfully performed. The patient was brought back from the theatre at 1 P.M. His failure to recover consciousness, and other symptoms, led to the discovery of the mistake. All possible remedies were applied. After telephone messages to the Royal Infirmary at Bristol an iron lung was procured. It could not arrive till 9 P.M.; when it came there were difficulties in fixing it; it had not been used before and the leads were not correct. Eventually the boy was placed in the iron lung, but his heart stopped beating at about 10.30. In answer to questions the county pathologist (who carried out the post-mortem examination) expressed the opinion that, if an iron lung had been available as soon as it was realised that a heavy overdose had been given, the boy might have been kept alive. The boy's father complained that replies to inquiries made while the patient was lying gravely ill were evasive and that he had not been sent for to see his son on his deathbed. The coroner drew attention to the need for doctors to give clear directions about dosage, to the desirability of relatives being given every opportunity in such cases, and to the hope that some day iron lungs would be provided for all hospitals. He returned a verdict of death from misadventure.

Medicine or Drink?

The recent decision about Hall's Wine (Nairne v. Stephen Smith & Co., see *Times*, Oct. 15) illustrates the drafting difficulties encountered in framing the Pharmacy and Medicines Act 1941. Besides abolishing the medicine duties and prohibiting the advertisement of remedies for Bright's disease, diabetes, epilepsy, tuberculosis and other specified illnesses the statute at last required the disclosure, both qualitative and quantitative, of the composition of medicines, while restricting the sale of medicines by unauthorised persons. This reform was in part delayed by apprehensions of the awkwardness of defining what is a "medicine." Would the statutory definition, for instance, cover or exclude cold cream or beef-tea or lime-juice or the so-called tonic wines? The draftsman, who had simultaneously to maintain a second front against intermittent pressure from the herbalists, eventually had recourse to the phrase "substance recommended as a medicine." This phrase he defined in section 17 as a substance which is referred to on the wrapper, container, label or accompanying document or in any placard or advertisement

> "in terms which are calculated to lead to the use of the substance for the prevention or treatment of any ailment, infirmity or injury affecting the human body, not being terms which give a definite indication that the substance is intended to be used as ... a food or drink and not as ... a medicine."

Asked to define an elephant, a little boy once confessed his inability but announced that he knew one when he saw it. The law occasionally declines to define its elephants; it refused to define the crucial word "uniform" in 1936, when passing the Public Order Act to control the displays of blackshirts, greenshirts and redshirts, and threw upon the magistrate the responsibility for recognising uniform when he saw it. Normally Parliament feels obliged to attempt explanatory definitions even though the resultant language be elephantine

Thus the definition clause in section 17 of the Pharmacy and Medicines Act left the court the question whether Hall's Wine was or was not a "substance recommended as a medicine", if it was so recommended, did it nevertheless still escape the requirement of the disclosure of its composition on the ground that it was intended to be used as a drink? And if it was so intended, was there a "definite indication" of the intention?

The litigation was in form a domestic quarrel The plaintiffs were shareholders in the defendant company (Stephen Smith and Co) which is the proprietor of Hall's Wine They asked the judge to declare that Hall's Wine was "a substance recommended as a medicine" within section 17 and to grant an injunction restraining the company from selling it without exhibiting the "appropriate "designation" and the "appropriate quantitative particulars" required by section 11 The company told the court that it did not desire to have the article classified as a medicine, the act, it argued, did not insist upon any specific statement that a drink was only a drink and not a medicine, it merely required a "definite indication", the word "wine" by itself definitely indicated a drink and not a medicine The Pharmaceutical Society, which has a statutory duty to enforce section 11, was also a party to the proceedings Its counsel explained that the act was passed to enable the public to know what it was buying Hall's Wine was recommended on its label or wrapper as a "tonic beverage" ("the leading tonic beverage for giving new life in all run-down conditions"), it was claimed to possess "approved tonic and nutritive elements" ("for fifty years doctors have recommended Hall's Wine for its assistance in convalescence after serious illness") "Tonic," observed the Pharmaceutical Society, is declared by the Oxford dictionary to be a well-known medical term, "tonic beverage" suggested something more than a mere drink, the rest of the label clearly implied something medicinal

Mr Justice Atkinson accepted this contention He was prepared to regard "run-down conditions" as an "ailment" within the statutory definition, the label meant that the "substance" should be used to treat an ailment Hall's Wine was therefore within the first part of the definition, but was it exempted from the act as being a drink? He ruled that it was not, he found no "definite indication" that it was to be taken as a drink and not as a medicine He granted an injunction in the terms asked for by the plaintiffs but suspended its operation for 28 days or pending steps to be taken for an appeal

SCLERODERMIFORM SARCOID

THE term sarcoid is applied to a group of neoplasms of the skin or subcutaneous tissue, in appearance resembling connective tissue and of low malignancy They *may be single or multiple* Their ætiology is unknown, but it is thought that they may be related to tuberculosis, syphilis or other chronic infection The following case, reported by A Fonseca (*Amatus Lusitanus, Lisbon,* 1942, **1**, 558) is an example of the multiple subcutaneous form A bricklayer aged 37 complained of nodules on the face, arms and trunk, present for about a year He had been treated in the past for gonorrhœa and for syphilis, the last antisyphilitic injections having been given, despite a negative Wassermann, 2 years previously during an acute respiratory affection He looked healthy and no evidence of organic disease was found on routine examination The nodules lay in the subcutaneous tissue, were of uniformly hard consistence and movable over the deeper tissues, and were neither painful nor tender No signs of inflammation or œdema were present X-ray examination showed no abnormality of the cranial or facial bones, peribronchitis and moniliform bronchiectasis were present in both lungs, suggesting a syphilitic condition The Mantoux, Kahn and Wassermann reactions were negative Biopsy showed a diffuse infiltration of the subcutaneous fatty tissue by connective tissue cells, lymphocytes and epithelioid cells, with much fibrous tissue The small blood-vessels were compressed and the lumen almost obliterated In some parts the arrangement was follicular, somewhat resembling a tuberculous nodule The overlying skin was unaffected

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M P

Miss Horsbrugh, in reply to a question reported a large increase in the number of nurses in service But sanatorium wards in some places can still not be opened and there is a restriction of cases admissible to infectious diseases hospitals It is not only a question of pay but of conditions and while many trained nurses have come back to the profession there are others doing munition work or office work It would be advisable to check the conditions of service in some of the smaller institutions where women complain of being treated as substitute domestic servants instead of being given opportunities of training And the Services are of course attractive to adventurous young people The Minister of Health was also subjected to a light bombardment on the supply of doctors for pensions appeal tribunals, and a question from Sir Ernest Graham-Little drew a statement of policy on not appointing a nutrition council as recently advocated because the Minister considered existing agencies were sufficient As soon as the House had gone into Committee of Supply to consider a vote of another £1000 million for war purposes the chairman of committee was asked for a ruling whether the question of pensions appeal tribunals could be deleted The answer was no But this and the previous questioning are only part of a preparatory barrage to an attack which will develop later in the month of November

The Minister of Pensions was also attacked on the refusal of Service pensions for technical reasons Mr Vernon Bartlett, who knows a good deal about publicity, said that he wondered if the Minister was not the worst enemy the Minister of Information had in this country *because there is not a town and hardly a village where* some pension case is not a cause of rankling discontent Almost the whole debate was on this key and the Minister is getting an unfortunate name for stinginess despite his habit of "stating emphatically" that he is doing his job *properly* Unhappily the medical staff of the Ministry get criticised for actions for which they have no responsibility

The last day of the last series of sittings, however, included a discussion on industrial rehabilitation which showed the *medical profession* in a more sympathetic light The work done at Mansfield to which I have made previous reference was described by Mr Bernard Taylor, the miner MP for that division, and the Parliamentary Secretary to the Minister of Labour gave a wide significance to the debate when he included all accidents and diseases leading to disability Mr Tomlinson also stressed the importance of the social and industrial expert's work in connexion with rehabilitation The facts were of course the same before the war as they are *now, but the evaluation of man-power* was different It is now so precious that much can be done by consent that before would have caused violent controversy Mr Tomlinson urged us to use all the brains and ingenuity we have to devise machinery and working conditions to prevent accident and disease

It is significant that the last debate on this closing day was on the spiritual side of the war Lord Halifax, Ambassador to the USA, and Sir Samuel Hoare, Ambassador to Spain, had spoken of the issues of the war as "the establishment of Christian civilisation and Christian brotherhood" Lord Winterton, a member of the Church of England, but with a far-reaching knowledge of the Moslem world, and Mr Sorensen, the pastor of a Christian congregation, both wanted this definition widened Lord Winterton spoke of the need to appeal to world religious and moral opinion and not to any one creed or religion Mr Sorensen pointed out that among the United Nations fighting Hitlerism there are three non-Christians to every Christian and wanted us not to label all the virtues Christian William Hickey, otherwise Mr Tom Driberg, MP, supported Lord Winterton and the Under-Secretary of the Foreign Office endeavoured with some difficulty to speak clearly on matters of such deep concern but agreed that whatever we are, Christians, Moslems, Jews, Atheists or Rationalists—because Russia comes in—"we are *fighting for* the same things and

FROM THE PRESS GALLERY

Industrial Rehabilitation

AT present the injured workman only receives compensation for loss of earning and nothing towards the cost of refitting himself to take his place as an economic unit in society In opening the debate on Oct 22 in the Commons Mr R J TAYLOR urged that this rehabilitation was rightly the responsibility of the nation He paid a tribute to the work done at the Mansfield centre, specially commending the absence of hospital atmosphere Mr BERNARD TAYLOR, who proudly claimed to come from the home and hub of rehabilitation, said that the foundation for recovery was laid at the fracture clinic but at the rehabilitation centre healing became an art which expressed itself in broken men made fit to re-enter industry It was important he held to remove the feeling of insecurity from the minds of the men, to limit the size of the centre to about 60 patients, and to insist that it be residential Mr DAVID ADAMS welcomed rehabilitation as a new science which would be a heritage to industry. Mr GEORGE GRIFFITHS, a Labour MP contrasted the emptiness of the opposite benches with their fullness during the debate on wages Mr G TOMLINSON, who *replied for the Ministry of Labour* widened *the scope of* the discussion to include all diseases which led to disability and the many accidents which occurred outside industry A skeleton service already existed in the Emergency Hospitals Scheme Many orthopædic centres had been established in England and Scotland with workshops and with facilities for massage, physical training and occupation therapy Other hospitals had been earmarked for fracture cases and the Ministry of Pensions was doing wonderful work at Roehampton The Minister of Labour had only introduced his interim scheme in October of last year and it might be that a greater scheme would emerge from it After physical rehabilitation came training and resettlement, and the effect on the patient of the first interview in hospital which held out the prospect of return to some kind of work was striking At first the scheme had been confined to training people for the war effort but it now covered all types of industry Up to the end of August over 41,000 people had been interviewed, mostly with war injuries, but some with prewar disablements About 29 000 had found work, but he would not like to say that all had been placed in positions where their injuries were taken into consideration, and at the end of the war some might have to be retrained Of the 600 blind people interviewed 200 had been found jobs—many in engineering shops—not previously regarded as suitable for the sightless Two centres, at Leatherhead and Exeter, previously supported by voluntary contribution, had been taken over, where very badly disabled people were trained or treated Grants were also being made to undertakings employing the severely disabled Mr Tomlinson ended by urging that we should not lose sight of the need to prevent accidents while taking every step to make rehabilitation a reality

QUESTION TIME

A Nutrition Council

SIR ERNEST GRAHAM LITTLE asked the Parliamentary Secretary to the Ministry of Food whether he would consider the desirability of setting in motion the formation of a nutrition council, consisting of clinicians, laboratory workers and medical officers of health, as urged from many authoritative quarters —Mr E BROWN, Minister of Health, replied I have read with interest the recent expressions of opinion about possible developments in the realm of nutrition, and have had an opportunity of discussing them with my colleagues I am grateful for this opportunity of making clear the position of the Government in this matter Though the advocates of the establishment of a nutrition council appear to differ somewhat among themselves in regard both to methods and to objects, I am in a position to say that the main purposes which they appear to have in view are already secured by existing arrangements Technical investigation and research are adequately provided for through the Medical Research Council, the Agricultural Research Council and the Department of Scientific and Industrial Research A great volume of work is continuously in progress under the auspices of these bodies, and the first named comprises amongst its members and officers a number of scientists outside the medical profession, and from the outset much valuable research on nutritional problems has been conducted on its behalf The application to current problems of the results of scientific investigation is primarily the responsibility of the health departments, to whom the Ministry of Food and the agricultural departments look for guidance in nutritional matters when framing their programmes of production import and distribution of foodstuffs Coördination of the policies of the various ministries concerned is fully provided for by appropriate interdepartmental machinery The Allied Governments last year appointed an Inter Allied Committee to prepare estimates of post war relief requirements, and I understand that this committee has already arranged for a subcommittee of Allied nutrition experts to examine the estimates from the nutritional standpoint

Advisers to the Food Ministry

Mr W MABANE, replying to Sir E Graham Little said that the scientific adviser s division of the Ministry of Food consists of the scientific adviser, the deputy scientific adviser and seven scientific assistants, one of whom is on loan to the British Food Mission in North America Liaison between this division and the scientific committee on food policy is maintained by the attendance of the ministry s scientific adviser by invitation as *an observer* when required at meetings of the committee The scientific committee on food policy consists of ten members who are experts in science, agriculture or economics. The chairman of the committee is Sir *Henry Dale* The last meeting of the committee took place on Feb 4, 1942

Discharged RAMC Doctors

SIR JAMES GRIGG informed Major J MILNER that about 800 qualified medical men have left the Army during the present war —Major MILNER Is it not the fact that many of these medical men were quite suitable for utilisation in other capacities in the Army, and that they are all qualified medical men who have been removed from the Army, or have received their discharge, or something of that sort ?—Sir J GRIGG More than half of them have been invalided out

Doctors for Pensions Appeal Tribunals

Major MILNER asked the Minister of Health whether he could, if required, provide or make available a maximum of 50 *medical men* for the staffing of pensions appeal tribunals, either permanently or on the understanding that they could be released on short notice if urgently required for other purposes —Miss HORSBRUGH The Minister is advised that the pressure on the services of medical men is so severe at the present time that it would be difficult to supply those suitably qualified for this work in the numbers indicated It must be remembered that any new obligation imposed upon the medical profession in war conditions would prejudicially affect other services —Major MILNER May we take it that though it is difficult, it is not impossible ?—Sir FRANCIS FREMANTLE Is proper attention being given to the possibility of employing men who are discharged from high positions in different Services, who are men of great experience and could be used for this kind of work ?—Miss HORSBRUGH Yes —Dr GUEST Are not a certain number of medical men in the Services retired on account of age, or on account of having held high rank for a certain period and are there not enough of these people fully to fill all the requirements of pensions appeal tribunal purposes ? Will the hon. lady take it from me that I know positively of, and that I can give her a list of people who would fill all these places ?—Miss HORSBRUGH I should be delighted to have that list

Shortage of Nurses

Mr R DE LA BERE asked the Minister of Health whether he was now in a position to make a statement regarding the Government's proposals for securing an increased supply of trained nurses , and the Government's proposals for ensuring a better standard of livelihood for those so engaged —Miss HORSBRUGH replied Proposals for securing a better distribution of certain nurses, after discussion with the Minister of Labour and National Service, have now been put to representatives of the nurses and of their employers The Rushcliffe committee is considering the salaries of nurses —Mr DE LA BERE This has been going on for a very long time, but the nurses' standard of pay has not improved, and nurses are not becoming more numerous Something ought to be done now it is no good referring the matter to committees we want some practical action —Miss HORSBRUGH The number of nurses has increased very satisfactorily, though I am not entirely satisfied that we could not at this time be training another 2000 or 3000 women who wish to become trained nurses in the future We could also do with another 10,000 nurses throughout the country There has also been an interim increase in salaries pending the result of this committee of inquiry.

Mr F MESSER Is it not a fact that the increase is mainly in student nurses and there are many trained nurses who will not come back into the profession because they are better paid outside ?—Miss HORSBRUGH No, there has been an increase in trained nurses as well as in student nurses I think at present nearly all the trained nurses in the country are working If there are any who can be released from other jobs I shall be glad to hear of them —Mr DE LA BÈRE The pay is quite inadequate —Dr SUMMERSKILL In spite of the increase is it not a fact that we have not been able to open certain sanatoria because of the shortage of nurses ?—Miss HORSBRUGH Yes, but we are arranging for a better distribution of nurses We have to have a ratio of trained nurses and nursing auxiliaries One of the difficulties has been to get the right distribution.

Maternity Accommodation in London

Dr SUMMERSKILL asked the Minister whether, in view of the inadequate accommodation for maternity cases in London, he proposed to take any action in the matter —Mr E BROWN replied The accommodation for London mothers includes in addition to the beds available in London those available at some 100 emergency maternity homes which were established in the reception areas The adequacy of the provision in London has recently been under discussion between officers of my department and of the London County Council Additional beds are being provided but the number which can be brought into use depends primarily on the number of trained staff who can be made available I have framed proposals with a view to ensuring that more of the women qualifying as midwives will undertake to practise as midwives, and after discussion with the Minister of Labour I am in consultation with representatives of employers and employed on this question —Dr SUMMERSKILL Is the Minister aware that unless some action is taken in this matter the scarcity will be reflected in maternal mortality figures next year ?—Mr BROWN I am quite aware of the importance of the matter —Mr MESSER Is the Minister aware that the Central Midwives Board has issued a report in which it is stated that there is no shortage of midwives, but that the midwives are not doing the work ?—Mr BROWN That is the real problem A number of trained and qualified women are not doing the work

Industrial Dermatitis

The number of cases of industrial dermatitis in 1941 and 1940 were 7291 and 4744, respectively A total for this year is not available (Mr E BEVIN replying to Mr D N PRITT)

Service Men and Tuberculosis

Of the total number of men invalided out of the armed forces from the outbreak of war until the end of September last, 5 8% were discharged on account of tuberculosis, and of the claims made in respect of this disability rather more than 70% have been allowed (Sir W WOMERSLEY replying to Mr W H MAINWARING)

In answer to a further question Mr BEVIN stated that, according to sample statistics taken earlier this year, about 1% of recruits examined under the National Service Acts are rejected on account of pulmonary tuberculosis

Compulsory Notification of Venereal Disease

Mr P G BARSTOW asked the Minister of Health whether he proposed to take steps to compel compulsory notification of venereal disease, having regard to the increase of these diseases throughout the country —Mr BROWN replied I am considering what action can most appropriately be taken to check the spread of venereal disease but, at the present time, I doubt whether the particular suggestion made is best calculated to secure this object

Lieut -Colonel A P HENEAGE Has the Minister's attention been called to the difficulty of dealing with carriers of venereal disease, and will he consider strengthening the existing powers ?—Mr BROWN I am aware of the difficulties, and I have under urgent consideration the most effective methods of dealing with them —Lieut -Colonel HENEAGE Will the Minister say how long these inquiries will take, in view of the situation at the ports, and will he treat this problem as a plague and cease to surround it with mystery and laissez faire ?

Mr BROWN I am not talking about inquiries I am talking about urgent consideration, which means, of course, that I am thinking about action

Quota of Medical Students

Sir ERNEST GRAHAM-LITTLE asked the Minister upon what expert advice and upon what basis he carried out his allocation of quotas of admission of students to individual medical schools , and whether he made, or was prepared to make, such quota conditional on the acceptance by the school concerned of a certain proportion of women students —Mr E BROWN replied By arrangement with the Minister of Labour the quotas for male medical students at each medical school are based normally on the average yearly admissions over the three years 1936–39 A variation to suit local conditions is allowed on the advice of the chief medical officer of my department after considering the representations of the school authorities Quotas for women students are similarly fixed on the basis of the average admissions for the three years 1937–40 Where the number of male applicants falls short of the quota for men, no objection is raised to the admission of women to make up the deficiency if the school so desires I have no authority to take the course suggested in the second part of the question, which raises a separate issue of policy now under consideration by the Committee on Medical Schools

Calling Up the 18's

The Minister of Labour informed the House of Commons that on Oct 22 His Majesty had signed a further Proclamation as a result of which men who had reached the age of 18 up to that date would be liable to be called up under the National Service Acts Mr Bevin proposed to register on Nov 7 those who had reached the age of 18 between July 1 and Sept 30, they would be medically examined later in the month and called up as required, and many might expect to join in December He would consider what adjustments might be necessary in the national interest as regarded apprentices and students The reduction in the age of calling up did not affect the minimum age, namely 19, at which men called up to the army were posted for service abroad

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"NIGHT WORK"

John Stuart Arey gives no key to his identity on the title page of his book (Eyre & Spottiswoode, 9s), though it seems certain from what he writes that he is a doctor or medical student, and possible that he is Welsh He tells the story of a night in hospital in 1940, a night in which two bombs and several incendiaries struck the hospital with the result, as the announcers say, that some damage was done and some lives lost His hospital and his characters, he asserts, are fictitional , but doctors and nurses and patients reading his book will know that there (and there only) he is talking rubbish We know this hospital, these people, the casual jokes, the routine which relentlessly brings order out of disaster We have worked or been treated there It was easy for him, perhaps, backed by our powerful associations, to evoke it all, even to the antiseptic smell agreeable to doctors, detestable to patients, which haunts the threshold of a hospital , but it was not at all easy to tell a violently dramatic story without ever forcing the drama on the reader's notice His purely objective style would be cold but for his insight into the characters he draws Only two seem alien to him Ackerly, the offensive little Lancastrian, and Whitley, the surgeon, whom Ackerly beautifully described as "full of gas and glory" It is as though Arey is puzzled to discover the human weaknesses over which these two had built their defences of aggression or complacence , and he cannot forgive them With the rest he is comprehending and at home, and takes his reader with him There is, for example, the old man at the beginning whom the nurse had wakened from a nightmare "But he was annoyed, and so he lay and groaned At times he belched, a windy, grieving sound " There are the rescue squad, digging out the medical registrar "Half an hour later the leader went into the tunnel himself, shifted a single piece of wood and sawed through another He looked back along the passage 'He'll come out now,' he said, conversationally " The book is built of short paragraphs flawlessly and inevitably placed To put it down half read is to have it tugging at the mind

Letters to the Editor

SULPHAPYRIDINE ANURIA

SIR,—This complication of chemotherapy is now widely recognised but it would appear that the principles of its treatment are sometimes incompletely understood Since recording my experience up to March 1941 (*Lancet*, 1941, ii, 272), I have met with further examples of hæmaturia and now have records of three patients successfully treated for anuria by ureteric catheterisation and lavage I would like to emphasise the following points

1 Anuria may develop in any adult receiving more than 5 g sulphapyridine daily if the amount of fluid retained is permitted to fall below 3000 c cm a day

2 Fluids must be pressed to *prevent* hæmaturia and anuria Once anuria has developed a high fluid intake is contra-indicated until the ureteric obstruction has been relieved by catheterisation This will be obvious to anyone who has studied the cystoscopic appearances at operation The intravenous administration of large quantities of fluid without first relieving the mechanical obstruction only increases the hydronephrosis and may lead to overloading of the circulatory system The latter is illustrated by the cases reported in your issue of Sept 26 Thus the case described by Carson and Smith (p 359) showed, at autopsy, œdema of the lower lobes and pleural effusion on both sides, while the case successfully treated by Benson and Percival (p 360) presented moist crepitations at the bases of both lungs before ureteric catheterisation

3 I believe, therefore, that ureteric catheterisation and lavage should be carried out not later than 12 hours from the onset of anuria It can be performed by a competent surgeon under local anæsthesia without detriment to the patient and will frequently prove a life-saving measure

It is now over nine months since a case of anuria developed in my department, in which an average of 250 g sulphapyridine is consumed daily I attribute this to the regime in force whereby each patient attends the four-hourly tablet parade with a pint mug of water in one hand and a specimen of his urine in the other Only if the urine is seen to be free from macroscopic blood are the tablets and water consumed there and then

S M LAIRD

ADEQUATE TREATMENT OF GONORRHŒA

SIR,—May I appeal to all practitioners to help the campaign against venereal diseases by using sulphonamides for the treatment of gonorrhœa in such ways as to make the patients non-infectious as quickly as possible, and to run the least possible risk of creating sulphonamide-resistant strains of gonococci ? From all parts of the country complaints are being received by the Ministry of Health that many practitioners start treating for gonorrhœa without first taking specimens for confirmation of the diagnosis, and give sulphonamides in quite inadequate dosage Failure to take specimens makes it very difficult whenever the symptoms have not abated or have relapsed, to decide if the original infection was or was not gonococcal—because gonococci may have been merely driven to ground by the remedy Inadequate dosage may abate the symptoms without eradicating the infection , thus by creating in the patient's mind the impression that he is cured it conduces to the spread of the disease

The evidence that it is possible to create sulphonamide-resistance in gonococci by under-dosage is strong and every effort should be made to avoid it because the spread of such strains throughout the country would take our antigonorrhœal measures back to the pre-sulphonamide era A timid dosage with sulphapyridine may perhaps be understandable when the infection is not life-endangering and the patient is ambulatory because of the toxic effects of this remedy but there is no reason for giving inadequate doses of sulphathiazole , and this drug is now available in sufficient amounts for the eradication of gonorrhœa from the community There is now good evidence that administration of 5 g of sulphathiazole on 2 successive days eradicates the disease, in males at least, in over 90% of cases , and 4 days treatment on the same lines affords still better results In neither case does such a dosage give rise to any undue proportion of toxic effects provided that the patient is made to drink plenty of water during chemotherapy

It requires only slight imagination to see the possibilities of this treatment from the point of view of the public health, if only all members of the profession will collaborate in exploiting it properly

L W HARRISON,
Adviser in Venereal Disease to the Ministry of Health

WOUNDS AND FLAVINES

SIR,—We have clinical evidence which confounds the impression formed during the last war and from recent experimental work (quoted in your leader of Oct 10) that healing is, or is likely to be, delayed through employment of the flavines Our evidence, which comes from the study of the healing of infected burns of 2nd and 3rd degree treated with proflavine sulphate, supplements the observations of Mitchell and Buttle that, " in 79 cases with bone, joint and soft tissue injuries no appreciable delay in healing has occurred "

Proflavine sulphate 0 4% in isotonic solution buffered to a pH of 6 2 in the water phase of an oil-in-water emulsion (see our paper in *Lancet*, 1942, i 347) does not impair the rate of healing of 2nd and 3rd degree burns, even when this flavine is applied continuously for 2–4 weeks or more, being renewed weekly We ascertained that from this depôt-dressing the concentration of proflavine constantly bathing the superficial granulations was 0 2%—half the maximum concentration in the depôt Infected 2nd degree burns of the area of a sheet of foolscap paper (650 sq cm) have been noted to heal in 14–21 days from the cessation of infection, or as in some cases, 20–36 days from the date of injury Areas of 3rd degree burning have taken longer, in proportion to the greater degree of damage All cases treated with proflavine sulphate have healed within what are to be regarded as " normal limits "—that is, within average times ascertained from parallel observations and measurements in comparable, non-infected cases of burns treated by tannic-acid and gentian-violet coagulation methods One example will illustrate this point

Injury —2nd degree burn of foot and leg (pail of boiling water)

Initial treatment —Compresses, 10% tannic acid and 1/1000 acriflavine

CASE A	CASE B
Stoker, aged 20	SBA (R) aged 19
Infected 5 days	Non infected
Treated Sat aq sod sulph , 2 days Proflavine emulsion, 19 days	Tan satisfactory throughout
Epithelialised by 26th day	Tan separated 30th day
Area burned 431 sq cm	Area burned 367 sq cm
Overall rate of healing (injury to epithelialisation)	Overall rate of healing (injury to separation of tan)
0 85 sq mm per mm circum per day	0 815 sq mm per mm circum per day

It will be recalled that Carrel and Hartmann (*J exp Med* 1916, 24, 429) noted that the rate of healing is proportional to the area involved—the larger the wound the greater the rate of cicatrisation Thus in some 2nd degree burns 650 sq cm or more in area we have found the healing edge advances inwards at the rate of 0 5 cm per day, the whole being healed in about 14–21 days—truly a remarkable " normal " rate of healing Now, if proflavine sulphate 0 2% were to exert an inhibitory action on fibroblastic activity and on epithelialisation in vivo, surely the best opportunity to observe this would be in the healing of such large areas where the rate is greatest Our series of measurements shows that this inhibition does not occur We have also observed that proflavine sulphate 0 2% has no inhibitory influence on the fibroblastic activity in exuberant granulations resulting from the hyperosmotic action of urea 5% In 3rd degree burns and " wounds " resulting from the excision of carbuncles, treated with proflavine-urea emulsions, no impairment of any kind has been noted

The solubility of proflavine sulphate in serum at 37° C is approximately 0 3%, the same as in saline (higher concentrations in serum produce flocculation) , this is a measure of the concentration probably obtaining in the soft tissues in the cases described by Mitchell and Buttle Our experience has been with the lesser concentration of 0 2%, but it seems reasonable to conclude from our complementary observations with actual measurements that in-vivo proflavine sulphate has no inhibitory action on fibroblastic activity and epithelialisation in the healing process

J F HEGGIE,
Aberdeen and Wakefield R M HEGGIE

CHALK IN BREAD

SIR —In the *Lancet* of June 27 I was surprised to see that Dr I Harris has quoted a letter from me, published in your columns on Nov 8 last year, in support of his contention that the addition of calcium to bread is not only unnecessary but actually harmful Dr Harris has completely misunderstood the purport of my letter All I wanted to point out was a simple scientific fact—namely that it is not possible to assess the Ca requirements of people from simple balance experiments unless the previous dietary history is known, since, for example with habitual low intakes, Ca balance may be attained at very low levels I did not mean to imply that this was normal or desirable In fact, of the cases I quoted from Owen, Irving and Lyall (*Acta med scand* 1940, **103**, 235) which were in balance on very low intakes, more than half had osteoporosis, as detected by X ray I deplore the implication that I consider that the Ca requirement of the adult is "very slight" In common with those qualified to judge, I consider that the Ca requirement of the normal adult individual is 0 8–1 g per day, and I support everything that Mr Bacharach says in the preceding letter with respect to the steps necessary in war-time to attain this intake

Department of Physiology,
University of Cape Town J T IRVING

FATE OF TRANSFUSED PLASMA

SIR,—The conception, put forward by Madden and Whipple and accepted by Beattie, that after transfusion plasma leaves the circulation and that plasma-proteins are stored in tissue cells, would seem acceptable only if osmotic forces are in play and the capillary walls permit the passage of protein If the plasma transfused is of the same osmotic pressure as the circulating blood, it is difficult to understand how even water can leave the blood-stream if the capillary wall is impermeable to protein—a conception dinned into us for years and years—how can protein pass ? Neither Madden and Whipple in their classic paper (1940), nor Whipple in his subsequent lecture (1942), nor Beattie either in his April paper (1942) or in his present one (*Lancet*, 1942, ii, 446) refer to these difficulties Perhaps Professor Beattie could enlighten us

Rugby R H PARAMORE

INSTRUCTION IN VACCINATION

SIR,—Now that medical students have to qualify much sooner than in peace-time, in order to play their part in the war-effort, it is more than ever necessary to excise redundant parts of the curriculum Most students, we are sure, feel that the six classes demanded by the official regulations in vaccinations are more than sufficient for the requisite training—and we think that some members of the staff would agree about this Surely two classes would be enough and the remainder of the time would be more profitably employed

BMA House A D BANGHAM,
Secretary, British Medical Students' Association

Obituary

DOUGLAS JAMES STIRLING ARMSTRONG

M B, B SC GLASG , D P H , MAJOR R A M C

WHEN the time comes for the story of the defence of Malta to be told the name of Douglas Armstrong, who lately died there, will have an honourable place He was the son of Dr W H Stirling Armstrong of Glasgow and graduated from Glasgow University in 1938 He joined the RAMC as a volunteer soon after the outbreak of war, and his appointment in January, 1941, as commanding officer of a field hygiene unit made him, at the age of 25, consultant and adviser in hygiene to the military garrison of Malta During the next eighteen months till his death, there were periods when, by enemy action, light, ventilation, water and sanitary facilities in large parts of the command were completely abolished Despite these tremendous difficulties, the hygiene of the garrison remained at the highest possible level

A G H , an RNVR colleague, recalls Armstrong's equanimity and perseverance when his headquarters were hit for the third time and almost completely destroyed, and how imperturbably he set about the work of reorganisation swiftly and efficiently To everything Armstrong did during these hectic eighteen months he added distinction and individuality, whether in painting water-colours of post-mortem lung-blast appearances, or investigating epidemic jaundice—a disease which may have caused his death

FRANK ROBINSON

M D MANC , D P H

Dr Frank Robinson, who died on Oct 5, was Cambridgeshire's first full-time medical officer He succeeded Sims Woodhead who had held the office in a consultative capacity during his tenure of the chair of pathology, and Robinson maintained this fruitful association of public-health and university work by acting as lecturer in sanitary law and administration in the university till the DPH courses at Cambridge were abandoned He had qualified in 1891 from Owens College, and as medical officer in one of Liverpool's poor-law institutions had early gained expert knowledge of both smallpox and typhus fever, the thesis for which he was awarded the MD in 1895 being a clinical study of 220 cases of smallpox From Liverpool he went to India as a plague medical officer to take his part in Haffkine's inoculation campaign On his return to England Robinson became assistant MO for the West Riding of Yorkshire and he held this post until he went to Cambridge where he was to work for twenty-six years Here he saw many changes in the public-health services, and had to administer many new developments, his successor testifies that at the end of his period of office Robinson left a smoothly working service which presented few difficulties But his interests extended far beyond his daily activities He presided over the Cambridge Rotary Club and served on many bodies doing voluntary medical work He was keenly interested in all the arts and was a musical performer of ability His collection of pottery was noteworthy, while his pioneer work for the Cambridge and county folk museum happily filled much of the leisure which retirement brought But the war had lately reharnessed him He was indefatigable as joint secretary of the local medical war committee and had lately been appointed by the Ministry of Health a consultant for the diagnosis of doubtful cases of typhus

GEORGE WASHINGTON BRAZIER-CREAGH

COLONEL AMS (RETD)

Colonel G W Brazier-Creagh, CB, CMG, died in London on Oct 10 in his eighty-fifth year He was named after his father George Washington Brazier-Creagh of Buttevant, and Creagh Castle, co Cork, and educated at Trinity College, Dublin, where he took his medical licence in 1880 A year later he was commissioned surgeon and shortly after his promotion to major in 1893 he conducted missions to Persia, where he made extensive explorations of little-known regions in Eastern Persia and Baluchistan and made possible the development of the Seistan-Nushki trade route For these services he was thanked by the government of India and for his work on the Punjab Frontier expedition he was awarded the medal with clasp At the end of 1898 he was seconded for extra-regimental service under the Pekin Syndicate which he accompanied through North China The South African war brought him to that country and he took part in the relief of Ladysmith and in such famous actions as Colenso, Spion Kop, Tugela Heights and

Pieters Hill Later he served in the Transvaal and on the Zulu frontier of Natal He was created CMG, awarded the Queen's medal with six clasps, and the King's medal with two clasps A colleague remembers how as a true horse-loving Irishman during the Natal operation in 1900 he sent a clear-the-line message announcing the winner of the Grand National, justifying this unorthodox urgency by saying it would cheer the troops He was made a lieut -colonel in 1901 and retired ten years later but served again in France all through the last war, when he was four times mentioned in dispatches and created CB

Notes and News

HEALTH OF AN ISLAND BASTION

DURING 1941 nearly half of Ceylon's six million inhabitants were treated for malaria—61,853 as inpatients and 2 860 890 at outdoor dispensaries—and 7113 of the 113 003 deaths that year were attributed to this disease Special mosquito surveys were undertaken for local authorities, but owing to the difficulty of obtaining equipment it was not possible to set up the proposed field laboratory Leprosy is another of Ceylon s problems which is being tackled with understanding and efficiency The old name of " leper asylum " has been changed by law to " leprosy hospital " and at the end of the year there were 1098 cases segregated in the island's two institutions A further 1213 cases attended the twenty-four clinics some for observation and some for treatment During the year 248 fresh cases were discovered, 10 among the children in the 112 schools which were inspected The nutrition division of the Bacteriological Institute has been seeking to meet wartime deficiencies and has had good results from red-palm oil and shark-liver oil as a substitute for cod-liver oil The war has not been allowed to interrupt the expansion of the maternity and child-welfare service for which there is a growing demand among the people Fifty additional midwives have been appointed for the country districts, and 24 new health centres and 5 maternity homes have been opened During the year 104 000 expectant mothers 116,000 infants and 108 000 preschool children came under the care of the service The quarantine department has an important place in Ceylon's preventive health services There are two camps in South India through which immigrants pass and where in 1941 for instance, nearly the whole of 3584 incoming estate labourers were treated for hookworm and vaccinated At Colombo the port authorities also vaccinated over 28 000 people many as a precaution against the one case of smallpox found aboard a ship which called at the port Of the outgoing passengers 258 were vaccinated at their own request

DENTAL EDUCATION AND THE STUDENT

BRITISH dental students have followed up their memorandum on the nation's dental services[1] with a study of the future of dentistry, of which part 1, on dental education, has now appeared[2] The joint planning committee of dental students, which is responsible for both publications, has now become a subcommittee of the British Dental Students' Association, founded last April The recommendations in the new memo represent the views of most of the dental students in the country, and follow lines which might be anticipated from the information in the first memo Students wish to see established a basic qualification in dentistry of uniform standard in all the dental schools of the kingdom , this they consider should be the degree of bachelor of dental surgery They suggest that present holders of the LDS should be allowed to enter for the BDS examination without further preliminary training Fees, they consider, should be the same at all schools and there should be plenty of state scholarships to encourage more young people to take up dentistry Schools should be provided with adequate full-time salaried staff and enough part-time instructors to provide about one demonstrator to six students Honorary staff should hold postgraduate qualifications and the hospital administrative body should be augmented by a committee on which house-surgeons and students would be represented They suggest that hours of work could be more vigorously enforced in most schools, and like medical students they find they learn more from clinical demonstrations and discussions than from any other method of teaching They are severe about the efforts of their lecturers, and suggest that lecturing should be the task of members of the salaried staff who have been trained to do it The suggestions that students should compile a case-book of the patients they have treated during training, and that there should be an interchange of final year students for three-month periods between schools both deserve serious attention They have drawn up one curriculum lasting 5½–6 years and another lasting 5 years, and make some suggestions about examinations which seem wise , for example, they propose that the practical examination in conservative dentistry should be held in two three-hour sessions, with several patients, in an attempt to eliminate luck as a factor They offer some general advice on the training of dental nurses among which is the rather vague proposal that they "should be instructed in the rudiments of nitrous oxide anæsthesia", and some much more concrete proposals that all medical students should be required to attend lectures and a practical course in giving nitrous oxide nasally and lectures on dental surgery, particularly on the relation of dental diseases to general health, and of systemic diseases to the mouth and teeth , on the ætiology, diagnosis and results of maleruption of teeth and on the diagnosis of caries, parodontal disease, alveolar abscess and other dental disorders

VIRTUE IN POTATOES

FOUR tons of potatoes have the calorie value of a ton of wheat This year, when home-grown potatoes look like being plentiful we shall have to see how far they can replace imported wheat Potatoes are an economical crop for though they have a greater water content than wheat they yield half as much again in calories per acre Lately their iron and vitamin content has received plenty of attention It has been found that a pound of potatoes provides 330 calories and 100 international units of vitamin B_1 (in each case as much as 5 oz of bread) as well as 3 mg of iron If the potatoes are freshly lifted a pound also contains 135 mg of vitamin C Thus from a pound a day—and surely an Englishman can manage as much as that, seeing an Irishman eats 2 lb —a man will get 11% of his total caloric requirements, 25% of his iron 20% of his vitamin B_1 and (provided the potatoes are freshly lifted) about twice as much vitamin C as he needs , even taking an average sample the vitamin C content of a pound of potatoes is equivalent to 3 oz of orange juice The vitamin-B complex is particularly well represented in potato Thus in addition to B_1 a pound contains riboflavin up to 11% and nicotinic acid up to 36% of the day's needs as much B_6 and folic acid as a pound of national bread and as much pantothenic acid as a pint of milk The average composition of potatoes has lately been given by the Ministry of Health as follows

Water 78%, protein 1 2%, carbohydrate 16 2% Every 100 g is equivalent to 70 calories, and contains on an average calcium 8 mg , iron 0 7 mg , vitamin C, when freshly lifted 30 mg , before Christmas 12 mg , after Christmas 6 mg , vitamin B_1 40 IU , riboflavin 0 07 mg , nicotinic acid 1 4 mg The following are tentative values vitamin B_6 0 15 mg , pantothenic acid 0 3 mg and folic acid 0 12 mg

Those who wish to make the most of the vitamin-C content should therefore eat as many potatoes as they can between now and Christmas

CAPPING THE MILK BOTTLE

THE war has made it necessary to find a substitute for aluminium caps for milk bottles and Mr R Kerr, Ph D in the Tin Research Institute's publication No 113 describes his investigation into the effect on milk of a tin-zinc alloy (92% tin), tinned lead foil and tinned copper foil Undesirable contamination arose when milk bottles were capped with tinned lead foil, as the foil interacts into the cream layer, but satisfactory results were obtained with tinned copper and tin-zinc alloy foils The production of thin copper foil coated with tin is, however, uneconomic in war-time, and as the physical properties of the tin-zinc alloy were satisfactory, and it could be readily made with the standard equipment, a 100% substitution was effected It was used until the need for tin economy arose as a result of the war in the Far East

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[1] See *Lancet*, 1941, ii 430

[2] Obtainable from the secretary of the Joint Planning Committee of Dental Students Royal Dental Hospital of London, Leicester Square, W C 2

University of Oxford

In a congregation held on Oct 15 the following degrees were conferred

DM —*M W C Oldfield
BM —M G Ellis, W E Hunt, D S Goldfoot, *L J Bussell, *W H H Andrews, and *R E B Tagart

* In absence

University of Cambridge

Prof H Roy Dean, FRS, has been elected representative of the university on the General Medical Council for the next five years

Royal College of Surgeons of Edinburgh

At a meeting of the college held on Oct 21, with Mr J W Struthers, the president, in the chair, the following were admitted to the fellowship

W R Black, MB EDIN D G W Clyne, BM OXFD , P G L Essex Lopresti, MRCS T B FitzGerald, MB BIRM , R A Fleming, MB DURH , Leon Gillis, MB WITWATERSRAND , Edward Gledhill MD LEEDS , J E V Jones, MB CAMB , A N Reid, MB EDIN , E L Salingar MB LPOOL Max Sugar, MD VIENNA, LRCPE , and Harry Winter, MD TORONTO

Socialist Medical Association

On Saturday, Nov 7, Prof H Levy, D Sc, will address this society on 100 years of socialist theory On Nov 21, Mr W C W Nixon will speak on nutrition Both meetings will be held at the Conway Hall, Red Lion Square, London, WC1, at 2 30 PM

Medical Superintendents Society

A meeting of the main executive committee of this society will be held at the Station Hotel, Derby, on Saturday, Nov 7, at 11 AM

Biochemical Society

A meeting of this society will be held in the department of organic chemistry of the Imperial College of Science and Technology, South Kensington, London, on Saturday, Nov 7, at 11 AM

Royal Institution of Great Britain

Prof W V Mayneord, D Sc, will give a Friday evening discourse on Nov 6 at 5 PM He will speak on the measurement of radiation for medical purposes On Dec 18, at the same hour, Prof J W Munro, D Sc, will discuss the place of research in the control of injurious insects Both meetings will be held at the institute, 21, Albemarle Street, London, W1

Basic Principles of Hospital Admission

Addressing the Cambridge University Medical Society on Oct 21, the Minister of Health reviewed the large scale experiment in hospital organisation provided by the emergency scheme The main lessons of this experiment, said Mr Brown, are that the patient should go to the hospital best suited to his needs, not necessarily to that to which he may have subscribed through a contributory scheme, and not necessarily that with which his own doctor has some connexion, or that in which a bed is first found for him To this end the hospitals in an area of suitable size should work as a whole, and hospital finance must be so arranged that it will not hamper the patient's transfer to another hospital as his condition changes The areas must be of suitable size so that the patient shall not be taken unnecessarily far from his home, and both voluntary and municipal hospitals must serve the area in equal partnership

Royal Society of Medicine

There will be a general meeting of the fellows of this society on Tuesday, Nov 3, at 4 PM On Nov 4, at 2 30 PM, Mrs Lilian Lindsay, LDS, will read a paper to the section of history of medicine on medical polemics from Hunter to Owen, and on the same day, at the same hour, the section of surgery will hold a discussion on hernia which will be opened by Major General Max Page and Brigadier Harold Edwards On Nov 6, at 10 30 AM, at the section of otology, Mr W Stirk Adams, Mr James Crooks and Major R R S Strang will open a discussion on chronic middle ear suppuration in children At 2 15 PM on the same day Mr V E Negus will give his presidential address to the section of laryngology He will speak on the mechanism of swallowing, and afterwards Sir Arthur Hurst will open a discussion on neurological disorders of the mechanism At 2 30 PM on the same day Dr A W Matthew, president of the section of anæsthetics, will give his address to the section on progress in anæsthesia

Royal Society of Tropical Medicine and Hygiene

A meeting of this society will be held at 26, Portland Place, London, W 1, on Wednesday, Nov 4, at 4 PM, when Colonel N Hamilton Fairley, FRS, will read a paper by Colonel J S K Boyd and himself on bacillary dysentery and its modern treatment with special reference to sulphaguanidine

Manchester Medical Society

A meeting of this society will be held at 4 PM on Wednesday, Nov 4, at the medical school of the university, Manchester, when Sir Charles Wilson, PRCP, will deliver an address on morale in leadership All graduates and students of medicine are invited to attend

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

Infectious Disease in England and Wales

WEEK ENDED OCT 17

Notifications —The following cases of infectious disease were notified during the week smallpox, 0 , scarlet fever, 2703 , whooping-cough, 907 , diphtheria, 971 , paratyphoid, 6 , typhoid, 6 , measles (excluding rubella), 5796 , pneumonia (primary or influenzal), 608 , puerperal pyrexia, 133 , cerebrospinal fever, 59 , polio myelitis, 24 , polio-encephalitis, 1 , encephalitis lethargica, 2 , typhus fever, 1 (at Bournemouth) , dysentery, 165 , ophthalmia neonatorum, 92 No case of cholera or plague was notified during the week

Deaths —In 126 great towns there were 1 (0) deaths from enteric fever , 3 (0) from scarlet fever, 2 (0) from measles, 5 (0) from whooping-cough, 15 (1) from diphtheria, 55 (7) from diarrhœa and enteritis under two years, and 17 (1) from influenza The figures in parentheses are those for London itself

Sheffield reported the fatal case of enteric fever Birmingham had 7 deaths from diarrhœa, Manchester 5

The number of stillbirths notified during the week was 202 (corresponding to a rate of 32 per thousand total births), including 18 in London

SMALLPOX IN FIFE

Up to Oct 23 notification of 28 cases of smallpox with 7 deaths had been received from the village of Methilhill or its near vicinity There is still no proof that the outbreak has any connexion with the Glasgow epidemic

Births, Marriages and Deaths

BIRTHS

ASHCROFT —On Oct 20, at Ripley Court, Surrey, the wife of Major D Walker Ashcroft, RAMC—a son
BEILBY —On Oct 19, in Edinburgh, the wife of Dr J H Beilby, of Bedale—a daughter
HORTON —On Sept 28, in Leeds, the wife of Surgeon Lieutenant Denys Horton, RNVR—a son
SANDON —On Oct 20, at Molesey, the wife of Dr Raoul Sandon —a son
SECKER WALKER —On Oct 19, at Farnborough, Hants, the wife of Dr G Secker Walker—a son
SYMMERS —On Oct 15 in Edinburgh the wife of Surgeon Lieutenant W St Clair Symmers, RNVR—a son

MARRIAGES

FRASER—HAGGIE —On Oct 22, at Dorchester Oxon, Thomas Alexander Fraser, MB, to Emily Elizabeth Haggie
LEE—PEARSON —On Oct 24, at Hampton Middlesex, Edward Lee, MB, to Joan Doris Pearson

DEATHS

HORNE —On Oct 21 at Warwick, Charles Eric Vernon Horne, MB EDIN , aged 44
MOYES —On Oct 23, at Warkworth, Robert Esmond Moyes, MD EDIN , aged 58
ROBERTS —On Oct 19 Arthur Roberts, TD FRCSL, late of Reading, and Bath, aged 81

Appointments

BATTY, C G, MD CAMB asst clin pathologist for Aberdeen
DFLORY G E , MSC LOND biochemist in the department of pathology of Preston Royal Infirmary
SCHAPIRA, DAVID MD VIENNA RMO at West Lane Isolation Hospital, Middlesbrough
SOMERSET V E , MRCS examining factory surgeon for Wem, Salop

SYNCOPE IN BLOOD DONORS

FAITH C POLES, M B LOND
CAPTAIN RAMC

MURIEL BOYCOTT, M B LOND
LATELY LIEUTENANT RAMC

(*Army Blood Transfusion Service*)

To an organisation which bleeds 100,000 voluntary blood donors a year, the prevention of faints is of considerable importance Of the first 10,000 donors bled by us only about 2 8% fainted, but even a small minority wastes the time and space at the disposal of the operator, and has a disproportionately large influence against recruiting Moreover, on two occasions a donor has injured himself by fainting after return to work, and such accidents must be avoided Our investigation was undertaken to discover, first whether any particular type of donor is likely to faint, and secondly whether prophylaxis is feasible

FAINTING REACTIONS

In the Army Blood Transfusion Service all donors are admitted into a waiting-room, and are asked for particulars of any recent illness or history of anæmia; nervous donors, who often produce large numbers of symptoms, are reassured by the medical officer All donors are kept waiting as short a time as possible, usually under 10 min The girl in charge of the waiting-room brings the donor into the operating-room, and leaves him lying on a couch in charge of the VAD The nurse explains the procedure to all new donors, while preparing the arm for the medical officer, who comes to each couch when the nurse is ready Local anæsthetic is injected, the needle is put into the vein and anchored with strapping The same nurse remains with, and talks to, the donor throughout, and donors can see and talk to each other At the end of the bleeding the nurse withdraws the needle, sees that the vein is adequately controlled by a gauze pad, and prepares her equipment for the next donor, before she allows the previous donor to sit up and walk to the rest-room Here he lies on a stretcher for 15 min, and has a cup of tea and a biscuit, he sits up for a further 5 min before his arm is dressed, and is then allowed to leave

The term "faint" has been applied to anyone who either loses consciousness, or who can obviously neither sit nor stand without doing so "Immediate faints" include those people who faint during or immediately after bleeding "Delayed faints" are those who faint when preparing to leave after their rest or on return to their work This paper takes no account of the small proportion of donors (perhaps 0 05%) who faint when only a negligible amount of blood has been removed, their reaction, which is certainly not due to loss of blood, is probably of emotional origin

In 116 faints encountered in bleeding a series of 4306 donors, the time of onset varied considerably, 6% fainted before 400 c cm of blood were removed, 57% after 400–440 c cm, and 4% during the rest period, 19% fainted when sitting up for the last 5 min rest and a further 14% were reported as fainting after return to work This last percentage is too low, since not all such faints are reported, particularly when the reaction is delayed several hours, but it is a most important group, both in causing accidents to donors and in discouraging others from volunteering

Some or all of the following clinical manifestations are shown by donors who faint Pallor is the most constant sign, being present in 9 people out of 10, the face is pale, the lips greyish, and in severe faints the hands also are affected Sweating is almost as common as pallor, it is not confined to the blush area but occurs all over the body The blood-pressure is low and may be unrecordable, the pulse-rate is slowed to 30–40 min or may be impalpable at the wrist Breathing is slow and shallow, although it may temporarily be rapid in association with the general restlessness at the beginning of the reaction Hyperventilation has never been observed before a faint About 1 person in every 4 loses consciousness; in some cases this may only be momentary, in others the period of unconsciousness may be longer and is sometimes accompanied by epileptiform convulsions, deviation of the head to one side, fixed dilated pupils and stertorous breathing The commonest prodromal symptoms are a generalised feeling of heat, nausea or epigastric discomfort Vomiting is not very common and when it occurs recovery is often rapid, in contrast, recovery is delayed by convulsions Incontinence of urine was noted in a few cases, and some people have also complained of severe cramp Facial pallor is not a reliable guide to the condition of the donor. It is usually, though not always, evident before the blood-pressure reaches its minimum, but sometimes the colour remains good for several seconds after the pulse has become impalpable at the wrist The return of normal colour does not necessarily run parallel with the recovery of the blood-pressure Most people are still pale when their blood-pressure has risen to a reasonable level, while a few regain their normal colour some time before their blood-pressure is high enough to permit their discharge Table I gives some indication of the time taken by the blood-pressure to return to normal, all readings were taken with the donor supine The systolic pressure may still be less than 100 mm Hg after an hour, and may take 2 hours to return to normal

TABLE I—TIME TAKEN FOR BLOOD PRESSURE TO RETURN TO NORMAL AFTER FAINTING

The systolic blood pressure may still be less than 100 mm Hg after 1 hour and may take 2 hours to return to normal

Age and sex	Blood pressure (mm Hg)							
	Before bleeding	Immed	Time after bleeding (min)					
			5	15	30	50	60	90
48M	125/	90/ (faint)			84/unr		94/68	
24M	172/98	138/72 (faint)	76/50	100/64	118/64		118/64	
24 F	115/			unr (faint)	83/66	88/66	96/67	96/74
19 F	108/	unr (faint)		88/60	90/66		95/66	108/66
30 F	124/	88/	unr (faint)	90/77	88/28	106/48		108/
56M	126/	(faint)	44/unr (faint)	94/62	98/58	122/72	120/70	

unr = unrecordable

POSSIBLE CONTRIBUTORY FACTORS

The factors most likely to predispose to syncope have been studied The numbers analysed are small but they may serve as a pointer to further investigations

Heat and humidity—No significant increase was observed in the summer months: from April to September, 5732 donors were bled and 166 fainted (2 9%); from October to March, 4991 were bled and 144 fainted (2 8%). On one occasion 54 donors were bled in a stuffy room in which the temperature rose to 110° F. and no-one fainted The humidity of the air in bleeding centres was estimated on many occasions and was also found to have no apparent relation to the number of faints Fainting has several times been observed in individual donors who were overheated by exertion

Sex and age—In a series of 4306 donors specially studied there were 1516 men and 2790 women Of the men 44 (2 9%) fainted and of the women 73 (2 7%). This difference between the sexes is not significant On the other hand there is a significant difference between the mean age of the fainters and non-fainters of both sexes

	Mean age in years		
	Fainters	Non fainters	SE of difference
Men	34 5	42 7	1 4
Women	32 9	46 6	1 6

The age-distribution in the two sexes is shown in fig 1 It will be seen that in some age-groups there is a big difference in the faint rate between the two sexes but the numbers of each group are too small for definite conclusions Greenbury (1942), however, in his analysis of the incidence of fainting in 5897 donors bled by the North-West London Blood Depot, found that women were more likely to faint than men, especially those in the 18–25 years age-group

Rate of taking blood—Variations in the rate of withdrawal from 2½ to 15 min had no apparent effect when the amount withdrawn was 540 c cm or less

Amount of blood taken—The effect of removing larger amounts of blood in a series of young factory workers is seen in the following comparison of donors bled consecutively during 2 months by the same medical officers

Amount removed	No of donors	Fainted
440 c cm	346	13 (3 8%)
540 c cm	410	35 (8 5%)

The youth of these factory workers is at least a contributory factor in this series Unfortunately it is rather a small group on which to base conclusions, but the difference is significant

Nervousness cannot always be a major cause of syncope in the group under discussion since many donors first faint at the second or third time they are bled Two medical officers fainted, one after giving the 6th and the other after giving the 15th pint of blood, at intervals of 3 months or more The faint-rate however is higher among donors bled for the first time

	No of donors	Fainted
First bleeding	4127	96 (2·3%)
Second or subsequent bleeding	3269	49 (1 5%)

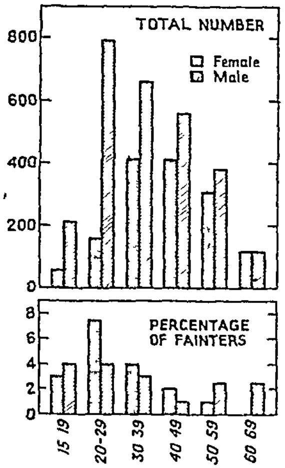

Fig 1 —Age and sex distribution of total donors and proportion of fainters in each group

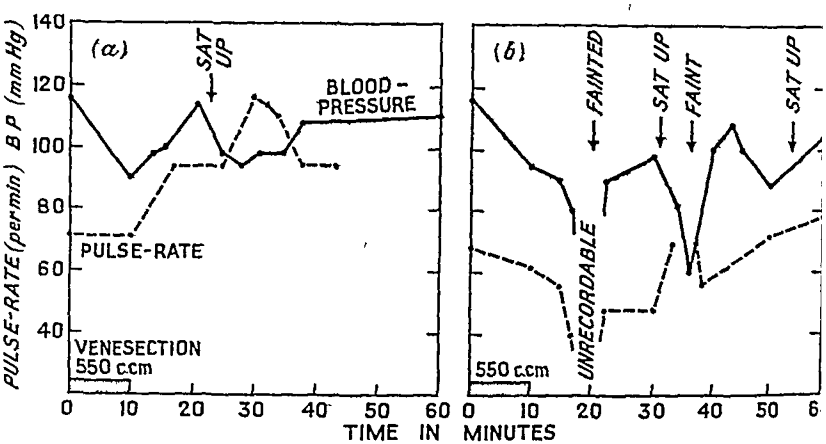

Fig 4 —Blood pressure and pulse-rate changes in the same subject after removal of 550 c cm of blood on t separate occasions (a) Skin-vessels normal, (b) skin vessels dilated by heat

Anæmia was apparently not a contributory factor Estimations done at the time of bleeding showed that the hæmoglobin in 145 non-fainting donors averaged 105% (80–132%) and in 35 fainting donors averaged 104% (71–135%) The hæmoglobin was estimated by the Sahli method and expressed on the Haldane scale Venous blood was used

Blood-volume —The surface area (SA) of the body, which is a rough guide to blood-volume, was found to be significantly lower for fainters than for non-fainters—i e, 2 0 and 2 6 times the SE of difference (Du Bois formula)

	Men		Women	
	No	Mean SA	No	Mean SA
Non-fainters	70	1 84 sq m	77	1 67 sq m
Fainters	38	1 78 „	68	1 61 „

Body form —Our observations suggest that fainting is evenly distributed among all types of body form and that there is no significant difference between the obesity factors for the men and women who fainted and for those who did not Of 147 non-fainters 58% were of the asthenic type, in comparison with 61% of 142 fainters

TABLE II—TIMES SINCE LAST MEAL IN 4436 DONORS AND 116 FAINTERS

—	Time (hours)										
	½	1	1½	2	2½	3	3½	4	4½	5	6
All donors	253	412	582	768	882	687	401	279	90	70	57
Fainters	4	7	14	15	25	18	14	3	2	7	7
Faints %	1 6	1 7	2 4	1 95	2 8	2 6	3 5	1 1	2 2	10 0	12 2
	Mean 2 3								Mean 7 4		

Fatigue seems important Air-raid wardens and others who have been unaffected on previous occasions have fainted when bled after a night on duty Fatigue may cause a depression of the normal blood-pressure, one person's pressure which was 102/68 mm Hg at lunch time was 80/48 mm Hg at the end of an arduous day work in summer

Time from last meal —If this is 4½ hours or longer t number of faints is significantly increased, from 2 3% 7 4% (table II) From ½ to 4 hours there is no significa variation in the distribution of the faints

Poor fluid reserves —It was thought that diminuti of the tissue fluid reserves from which the blood-volur is replaced might be important, particularly in donor who work in foundries and smith shops Of a group 656 such people 19 (2 9%) fainted, whereas 721 in a co trol group of the same sex and similar age-distributio had a faint-rate of 1 5% Further investigation of th problem was undertaken and will be discussed later

A normal low blood-pressure —The initial blood-pre sure is no guide to the likelihood of fainting In 5 unselected donors the mean initial systolic pressure w 128 mm Hg, while in 84 who afterwards fainted the mea initial reading was 126 mm Hg We thought it possib that those people with a habitually low systolic pressu would stand bleeding badly Armstrong (1939) says th a systolic pressure below 100 mm Hg is pathologica but our own findings agree with Rook and Dawson (193 who say that a low systolic pressure in a healthy subje often indicates a stable and adaptable cardiovascul system This is illustrated by the blood-pressure recor of four donors

Donor	Initial (lying)	After bleeding (lying)	After rest (lying)	Sitting
1	90/	80/	88/	
2	100/	92/	94/	
3	102/68	88/48	96/62	
4	100/56	102/56	84/40 & 95/50	95/5

EFFECT OF BLEEDING ON BLOOD-PRESSURE

The effect of bleeding on blood-pressure was studied a series of 707 donors, including 64 with immediate a 20 with delayed faints The blood-pressure was record before and immediately after bleeding, and in half t people again after 15 min rest The rules laid down the British-American Commission (1939) were observed nearly as possible, although it was impossible to ensu the constant relation to meals recommended, and on 100 cases were given the advised 10–15 min prelimina rest to allow the blood-pressure to reach a stable lev Readings in nearly every case were taken from the fr arm On occasions when both arms were used no co rections have been made, as the difference on the tw sides has been shown to be small (Shock et al 1940), an 200 observations gave the personal error of the observ as ±2 5% We noted that when a person is keyed up anticipation of bleeding the blood-pressure does not fa the anticipated amount even if he is rested until a stable level is reached (fig. 2).

	No of subjects	Mean fall in BP (%)	SD
Rest preparatory to bleeding	99	3.5	5.75
Rest, unassociated with bleeding . .	61	7.25	6.1

In 101 donors first resting until the blood-pressure reached a stable level and then submitting to the withdrawal of 440 c.cm. of blood without fainting, the mean fall in blood-pressure noted immediately after bleeding was 7% (SD 11.2). The total change in blood-pressure is approximately the same whether the donor is given a planned preliminary rest of 10–20 min. before he is bled or whether he is bled in the routine way which usually entails lying down for 10 min. on the operation couch.

	Subjects	Mean fall in BP (%)	SD
Planned rest and bleeding	101	9.1	11.5
Routine rest and bleeding	606	10.3	12.85

Those donors who faint ½–6 hr. after they are bled have not shown an unusual fall in blood-pressure immediately after bleeding (fig. 3). In 20 such cases the mean fall was 8.5% (SD 6.23).

A low blood-pressure after bleeding was common to all the immediate faints and the 61 cases recorded showed a mean percentage fall of 30.5 with standard deviation of 11.3 (fig. 3). In 60 people the blood-pressure was followed during the actual removal of the blood. In most cases the fall was steady throughout; in some it became steeper after the 400 c.cm. mark had been reached and this fall was accentuated when the amount withdrawn was increased to 500 c.cm. or more. One donor however showed a fall in blood-pressure from 118/68 to 100/64 mm. Hg when 440 c.cm. was withdrawn, and this fall was increased by only 2.5%—from 118/80 to 97/70 mm. Hg—when on another occasion 1000 c.cm. was withdrawn. On both occasions the pulse-rate remained constant. A series of 21 people showed a mean fall of 7.4%, 8.7% and 13.0% after 300, 350 and 440 c.cm. of blood had been withdrawn.

In 377 donors a third reading of blood-pressure was taken; the systolic pressure in half the cases had returned to normal or was rising at the end of 15 min. rest, while in the other half it was still falling. Of 16 delayed faints reported to us 15 had shown a falling pressure after 15 min. rest. Three examples illustrate this; the blood-pressure (mm. Hg) was taken with the subjects lying down.

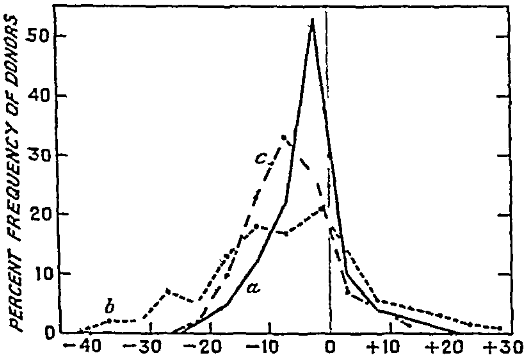

Fig. 2.—Changes in systolic blood pressure produced by 15 min. rest (a) as a preliminary to bleeding, (b) plus bleeding, and (c) unassociated with bleeding.

Before bleeding	After bleeding	After rest	Faint
135	132	104	On return to work
150	140	110	Later in street
118	102	100	On leaving

EFFECT OF BLEEDING ON PULSE-RATE

In 107 donors an attempt was made to correlate changes in pulse-rate and blood-pressure during the planned preliminary rest and during bleeding. In 53 cases the pulse-rate remained unaltered (within a range of ± 5), and in these people the blood-pressure fell slightly (mean drop 7.1%). In 21 cases the pulse-rate rose more than 5 beats per min. when the blood-pressure remained virtually unaltered (mean fall of 2.0%). The greatest fall in blood-pressure (mean fall of 14%) was accompanied by a decrease in pulse-rate of more than 10 beats per min. (27 cases), and all cases of syncope immediately after the giving of blood showed this bradycardia. This slowing of the pulse was noted by Ebert and Stead (1941) in volunteers from whom large amounts (700–1200 c.cm.) of blood were withdrawn. We have been unable to discover whether the pulse-rate alters or the blood-pressure falls first. Cardiac slowing and a fall in blood-pressure appear to start simultaneously and run a parallel course, as in the following case, a patient aged 19:

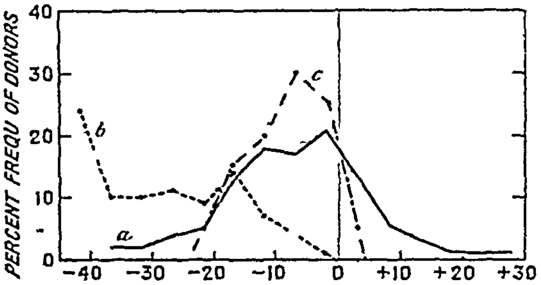

Fig. 3.—Differences in systolic blood pressure readings taken just before and 2 min. after removal of 440 c.cm. blood. (a) Donors who did not faint, (b) donors who fainted immediately after bleeding, and (c) donors who fainted on return to work.

	Before bleeding	After bleeding	After 2 min	 5 min	 10 min
BP (mm. Hg)	118/72	52/30	68/40	78/40	92/54
PR per min.	100	43	54	56	62

In a very few cases the blood-pressure fell before there was any change in pulse-rate. Slowing of the pulse is not such a constant finding in delayed faints. If the heart can prevent the drop in blood-pressure, which in this type of faint seems to be the primary change, by increasing its rate the donor may feel shaky without actually fainting (fig. 4), as the experience of the following patients shows:

Woman aged 20—

	Before bleeding	After bleeding	After rest	Sitting up		
BP (mm. Hg)	124/58	92/50	100/62	96/66	92/66	96/68
PR (per min.)	70/	70/	94/..	94/	116/	94/ Felt shaky, no faint

Same 6 months later—

BP	116/68	80/46	Unrec., fainted	104/60	90/60
PR	68/	57/	40/	64/	64/..

Man aged 19—

BP	118/72	52/30 fainted	108/58	88/58	50/? Felt faint
PR	100/.	40/	68/	80/ .	80/

This compensatory rise in pulse-rate is seen in fig. 4a.

EFFECT OF POSTURE ON BLOOD-PRESSURE

Although we realised that the efficiency of the cardiovascular system cannot be judged by the behaviour of the blood-pressure only (Schneider and Truesdell 1922) we thought it possible that delayed syncope occurred in those people in whom the systolic blood-pressure normally falls when they change from the recumbent to the erect position. In one girl, for example, the blood-pressure when recumbent was 120/76 mm. Hg and dropped to 110/70 when sitting up. She was bled and fainted on return to work. A follow-up of our delayed faints, however, showed that fainting was not confined to those normally showing an orthostatic fall in pressure; for a subject whose systolic blood-pressure normally rose on standing up might not always exhibit this rise after giving blood. In these people an orthostatic fall seems to be a temporary legacy of blood loss; for example, one woman showed a rise in blood-pressure on sitting up from 156/98 to 166/98 mm Hg in spite of which she fainted on return to work the first and second times she was bled , on the third occasion her blood-pressure (which was 156/86 before bleeding and 140/74 after bleeding) fell from 128/84 in the recumbent position to 122/84 and 116/70 when erect She was rested until her cardiovascular system (judged from the behaviour of the blood-pressure) was reacting normally to changes in posture, and she felt no ill effects from this bleeding

Ellis and Haynes (1936) draw a distinction between true orthostatic hypotension and poor adaptation to changes in posture In the former the fall in both systolic and diastolic pressure is immediate while in the latter a rise in diastolic accompanies a gradual fall in systolic pressure, the diastolic finally falling also Our cases of delayed syncope resemble in the main this latter type. The fall in systolic pressure is gradual, reaching a maximum in 5–10 min after sitting up (table III) and giving rise to symptoms when still measuring 80–90 mm Hg Fainting is as a rule accompanied by sweating and pallor but this is by no means invariable and several cases have been reported to us who maintained a good normal colour the whole time, in this way resembling cases of true orthostatic hypotension

TABLE III—ORTHOSTATIC FALL IN BLOOD-PRESSURE AFTER BLEEDING

The orthostatic fall in blood pressure is maximal after 5–10 min in the vertical position, and this fall can be produced in someone with a normal response when there is vasodilatation of the skin

Age and sex	Blood-pressure (mm Hg)								
	Before bleeding (lying)	Immediately after bleeding (lying)	After rest (lying)	Time after sitting up (min)					
				2	3	5	6–10	15	30
25 F	108/	74/	96/		82/		78/		
32 M	114/	100/	110/				92/ (felt faint)	96/	
56 F		44/	122/68				108/		120/74
30 F		72/	100/			90/	114/		
32 F	135/	120/	126/			112/	110/	116/	
25 M	132/	118/	120/	128/	120/		120/		132/
19 M	118/60	52/30	108/28	108/	88/58	50/?	(faint)		
Donor AB (normal)									
30 F	118/	88/	100/				108/		110/
Donor AB (skin vessels dilated)									
	124/60	92/50	114/62		94/66	92/66	96/66		

In most donors who felt faint on sitting up the diastolic pressure was found to be unaltered or slightly lower after the change in position, and after a few minutes it fell parallel with the systolic pressure, as in the following four cases

	Subject—A	B	C	D
Lying down	108/58	100/50	140/86	120/70
Sitting up	88/58	90/50	128/82	136/70–104/52

Those who did not feel faint on sitting up usually showed the small rise in diastolic pressure normally expected on assuming the erect position, as follows

	Subject—A	B	C	D
Lying down	98/50	100/60	108/70	104/70
Sitting up	108/68	132/64–128/70	120/78	110/72

We thought it possible that if the normal reflex constriction of the small skin vessels was completely or partially prevented by the application of heat (in these experiments the subjects were given a comfortably hot bath) the peripheral resistance would be reduced enough to cause an orthostatic fall in both systolic and diastolic pressures It was found however that heat alone in most cases is not sufficient to do this

	Subject—A	B	C
Lying down	128/62	112/70	104/68
Sitting up	135/62–130/72	114/70–108/70	100/72–100/68

If blood loss is also suffered there is a postural fall in systolic and diastolic pressures, and syncope may result presumably owing to a lowered peripheral resistance

	Subject—A	B	C
Lying down	126/82	102/62	94/60
Sitting up	112/78–110/78	70/42	78/54

FAINTING AND SHOCK

The most complex type of faint is that which occurs some hours after the donor is bled In these cases syncope is not the result of any one factor, but, as McDowall (1941) pointed out, the cumulative effect of many The cardiovascular system may compensate successfully for the initial reduction in blood-volume , but if then the effective circulating volume is further reduced by pooling of the blood in the small vessels of the skin or splanchnic area, this compensating mechanism is no longer adequate and circulatory failure results In many ways these faints resemble the vasovagal attacks described by Lewis (1932) but there is a longer time between the stimulus and the attack, and recovery is slower Similar cases were described by Ferris, Capps and Weiss (1935), who consider that a stimulus may produce primarily a fall in blood-pressure , cardiac slowing , or cerebral vasomotor changes In most of the immediate faints the changes in blood-pressure and cardiac rate happened so rapidly that it was impossible to say which came first In cases of delayed faints, on the other hand, the blood-pressure often fell while the pulse-rate remained normal Formerly it was thought that any great blood loss produced a rapid pulse-rate Recently Grant (1941), in his survey of air-raid casualties, has stressed the point that a low blood-pressure with a slow pulse may be found in cases of severe wounds and grave hæmorrhage Some of our most severe cases of syncope had a blood-pressure of under a 100 mm Hg after an hour's rest, accompanied by a thready pulse of normal rate All eventually recovered with warmth, fluids and raising the foot of the couch

PROPHYLACTIC MEASURES

The following procedure was tried in an endeavour to reduce the number of both immediate and delayed faints

Administration of normal saline—As Bazett (1941) has shown that there may be up to 18% reduction in the blood volume of a dehydrated man it was decided to try the effect of a litre of normal saline given 2–4 hours before bleeding to men from hot shops such as foundries and smith shops The faint-rate, which is high for such men (most of them are over 40), was reduced in a highly suggestive manner On these numbers, however, the difference does not quite reach the level of significance when exact methods of fitting are employed

	Donors	Faints
With saline	487	4 (0 8%)
Without saline	654	19 (2 9%)

A rate of 2 9 is high for men with a mean age of 43 5

In spite of the reduction in the number of faints the mean fall in blood-pressure for the series receiving saline was not significantly different from the control series These results agree with those of Van Liere and his colleagues (1940) who found that administration of fluids by mouth immediately after blood loss was of no assistance in restoring blood-pressure Bock and Robertson (1919), however, by forcing up to 5 litres of fluid, succeeded in raising the blood-pressure in wound shock, a method impracticable to us Two investigations were undertaken to find out whether the decrease in the faint rate was due to a more rapid and complete restoration of blood-volume

The level of the hæmoglobin in ten men who work 6 hours a day in a shed containing furnaces at 1200° F was observed at intervals for 4 days after bleeding In one man full dilution had taken place at the end of an hour, in one at the end of 2 hours, in three at the end of 5 hours, in three at the end of 24 hours, while in the remaining two men dilution had started in 1 hour and 5 hours but was not complete at the end of 48 or 96 hours These rates of dilution are comparable with those found by Whitby (personal communication) and

Wallace and Sharpey-Schafer (1941) in normally hydrated men

The rate of dilution of the hæmoglobin was followed in four normally hydrated people and in the same people bled (at a later date) 2–4 hours after they had drunk a litre of normal saline Only one man diluted quicker after saline On the first occasion dilution was not complete at the end of 24 hours while after saline full dilution had taken place in ¼ hour, this was followed by partial concentration with complete dilution again in 5 hours Similar results were obtained by Ebert, Stead and Gibson (1941) in two of three cases who received a litre of normal saline intravenously after removal of 18–20% of the blood-volume, the third showed a more rapid and lasting dilution

It seems probable, therefore, that the decrease in faint-rate is not due to a rapid replacement of the blood-volume

Prophylactic glucose —As there is a significant increase in the number of faints if the time from the donor's last meal is over 4 hours it seemed possible that a low blood-sugar might be a contributory factor Blood-sugar estimations have been done on twelve fainters and twelve controls of the same age and with the same interval after a similar meal In all cases the blood-sugar was within normal limits, the mean value for the fainters was slightly lower than for the controls Glucose, 50 g, has been given prophylactically before bleeding to 800 people Alternate donors arriving at the centres received glucose, the others were given a saccharine drink. The faint-rate for those who had had glucose was not reduced

Procedure adopted —In the last 2772 donors bled by one of us the following procedure has been adopted Donors were not rejected because of a previous history of fainting, associated or unassociated with bleeding, provided it is not accompanied by any organic disease They were referred if it was considered that they were excessively fatigued, and were fed with tea and biscuits before as well as after the blood was taken if their last meal had been taken more than 4 hours previously Only 440 c cm of blood was withdrawn and if the donor was under 7 st in weight this was reduced to 350 or 400 c cm Donors from hot workshops were given a litre of normal saline before they were bled Whenever possible a series of blood-pressure readings were taken on all donors who had fainted on return to work after a previous blood-letting If the systolic pressure fell as a result of bleeding or during the rest period and continued to fall on sitting up the donor was given further rest, even if feeling perfectly fit at that time

CONCLUSIONS

Fainting after the removal of blood affects both sexes and different builds of people equally, but is more common in the young The incidence is raised by increasing the amount of blood withdrawn from 440 to 540 c cm, but not by increasing the speed of withdrawal, by bleeding tired and hungry people, but not by bleeding in a moderately hot and humid atmosphere Fatigue is difficult to assess, and now, when many men and women in industry are working longer hours than they have ever done before, it is difficult to decide who is and who is not fit to give blood It seems, however, that a man who is used to night work can be bled when he comes off his shift without any ill effects, while to bleed an air-raid warden after an unaccustomed night up will often cause fainting Seltsovsky (1940) also considered that hunger and fatigue were the two most important causes of fainting in blood donors

Loss of 440 c cm of blood leaves 97% of blood donors apparently unaffected, and if any fall of blood-pressure occurs it is small This fall cannot be reduced by rest before bleeding, since emotional tension prevents the systolic pressure from assuming its usual stable level The donors who show the biggest drop in blood-pressure show also slowing of the pulse-rate In those who faint at the end of bleeding the onset of symptoms is almost always associated with a fall in blood-pressure and pulse-rate An orthostatic fall in blood-pressure may be a temporary phenomenon due to blood loss It is maximal 5–10 min after the donor gets up and accounts for one group of delayed faints

The most dangerous type of faint is that which occurs ½–6 hours after bleeding when the donor is back at his work or out in the street Prevention of such faints is of great importance A number of these donors have been found to have a transient orthostatic hypotension after being bled, and when this can be detected the subsequent faint can probably be prevented by giving the donor additional rest

Glucose, 40 g, given prophylactically to donors was without effect on the faint-rate, but for men from hot workshops the rate was suggestively (though on the numbers observed not quite significantly) reduced by giving them a litre of normal saline some hours before bleeding By following the procedure described the general faint-rate has been reduced to 1 75% (a fall of more than a third in the last 2772 donors bled)

We wish to thank members of the Army Blood Transfusion Service who have helped us to collect facts and given advice, and Dr J A Fraser Roberts for help with the statistical analyses

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MIGRATION OF FOREIGN BODIES

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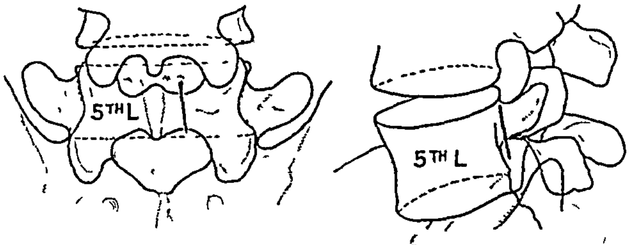
THIS curious case of delayed symptoms from a needle in the theca of a soldier who was unaware of its presence raises again the question whether migration of foreign bodies such as pins and needles does take place as is popularly believed

A gunner, aged 21, who had been four years in the Army, reported sick because of pain in the lower part of his back and legs He was given some palliative treatment and returned to duty, but as he continued to complain of persistence of the pain, X-ray films were obtained of the lower part of the spine To everyone's astonishment, including that of the patient himself, these revealed the eye-end of part of a sewing needle lying inside the spinal canal, behind the body of the fifth lumbar vertebra (see figure) Inquiry elicited the fact that when he was 4 years old he had rolled on the floor and a sewing needle had entered his back and broken off Two attempts to remove the embedded part, made at the time at his local hospital, had failed Inquiry at the hospital showed that these took place on Aug 23, 1926, but unfortunately the X ray films had not been kept and the hospital record merely stated "FB present" His chief symptom now was pain in the lower part of the back and thighs, induced particularly when sitting and flexing the head Occasionally the pain seemed "to shoot through the spine" and in the two months before he was admitted to hospital he had lost 2 st in weight The only objective findings were exalted sensation over the lower lumbar and sacral dermatomes and diminished motor power in the glutei, the right being estimated at 60%, the left 80% The knee- and ankle-jerks were exaggerated

Operation —On Feb 16 with the patient under nitrous oxide, oxygen and ether, laminectomy (L4 and L5) was performed, the dura opened and the cauda equina exposed The piece of needle was seen lying among the elements of the cauda to the right of the midline and covered by a thin film of arachnoid It was encrusted with rust and old blood-clot, and easily removed The patient made a good recovery and was discharged to duty symptom-free

Were the symptoms in this case the result of migration and recent change in the position of the needle, or of a mild inflammatory reaction consequent upon some slow chemical changes ? The deposit of rust and old blood-clot and the localised arachnoiditis suggest the latter explanation There is a widely held belief, however, even among members of our profession, that foreign bodies such as pins and needles may travel considerable distances in the tissues, and this is worthy of examination Gould and Pyle (1897) state that the wanderings of pins and needles in the body are well known and relate that on Nov 15, 1802, the celebrated Lettsom spoke of an old lady who sat on a needle while riding in a hackney coach ; the needle passed from the injured leg to the other one, where it was extracted Since drawing attention to this question earlier this year (Rogers 1942), the following cases have come to my notice

A woman, aged 70, while eating suddenly felt a sharp prick in her throat and thought she had swallowed a needle She was rushed to hospital, but laryngoscopy failed to reveal it Sixteen days after the accident a foreign body was palpated beneath the skin over the anterior border of the sternomastoid and under local analgesia a piece of moderately stiff, bent wire 2 9 cm in length was removed There was no associated cellulitis or infection (Duhan 1940, Graham 1941)



Anteroposterior and lateral views of eye end of piece of sewing needle in spinal canal

Three months after introducing a piece of slippery elm into her vagina a woman aged 31 was readmitted to hospital with a brawny mass about the size of a cricket ball in the left upper quadrant of the epigastrium From this about 10 oz of pus were evacuated along with the piece of wood 4 in long She made a good recovery (Ross and McLellan 1942)

A needle localised by X rays on the plantar surface of the foot was found at operation on the following day to be visible under the skin between the big and second toes of the foot (Dr W H Gregory's case)

A hypodermic needle broke off when an injection was being given about 2 in above the elbow A small incision was immediately made at the site but the fragment could not be found Two hours later an X ray film showed the fragment lying over the deltoid It had moved approximately 10 in in 2 hours time (Dr J M Walker's case)

The eye end of a darning needle entered between the sole and the upper of the shoe of a doctor's wife aged 40, and broke off, a piece of the needle penetrating the sole of the foot, 4 weeks later she felt pain in the inner side of the thigh of the same leg and later the same day removed a small piece of needle which she was able to pick out herself (Mr John Patrick's case)

A girl aged 16 was brought to hospital by her mother because "a needle was sticking out of her tummy" Examination showed the blackened end of a needle projecting just above and to the left of the umbilicus It was firmly embedded in the abdominal wall and local infiltration with novocain and much pulling were necessary before it could be extracted The mother stated that her daughter had swallowed the needle when a child of 2½ (Dr J D R Murray's case)

Other cases related to me are too vague to be here included Some instances of unexplained foreign bodies found after death are reported an unexplained needle in lung (Rusby 1942), a darning needle surrounded by dense fibrous tissue in the centre of the right lobe of the liver, discovered at autopsy (Dr J M Walker), a needle 3½ cm long discovered in the saphenous vein of an old woman in the dissecting-room and so covered with rust and eroded that it broke into pieces on being withdrawn from the vein, to the wall of which it was adherent (Mr S K Wright of Manchester)

DISCUSSION

The travelling of projectiles or fragments of such which have penetrated vessels and become emboli can be readily understood and has been amply discussed by Sir John Bland-Sutton (1919) An example of this type which has recently come to my notice may be quoted A radium needle which had been implanted in a mass of glands in the left posterior triangle of the neck was successfully removed from the right branch of the pulmonary artery by Mr Harold Upcott of Hull The needle had evidently traversed the left innominate vein, superior vena cava, right auricle and ventricle The reported migration of pins and needles, independently of the blood-stream, however, is not as easy to understand There can be no doubt that many such foreign bodies remain at their site of lodgment for long periods, Dr James Brailsford tells me he has seen cases in which needle fragments have been retained at one site for 20 years or more and, like myself, he is sceptical about many reported cases of migration The few which are noted here, however, seem sufficiently definite to accept as evidence that such migration can occur occasionally It is permissible to conclude that foreign bodies such as pins and needles may remain fixed at their site of lodgment, rarely travel as emboli in blood-vessels, and rarely travel either through the subcutaneous tissues or along fascial or intermuscular planes, for varying distances Migration in general seems to be towards the trunk (i e, in a proximal or centripetal direction) and towards the surface As Sir John Bland Sutton remarked, "Missiles often attain more curious places by accident than they could obtain by design"

I am indebted to these friends and colleagues who have kindly written to me about the cases to which reference has here been made

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CAPILLARY FRAGILITY (RESISTANCE)

NEGATIVE- AND POSITIVE-PRESSURE TEST COMPARED

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THE state of the capillary walls is of wide interest in connexion with the hæmorrhagic diseases and certain vitamin deficiencies In particular the work of Wolbach and Howe (1926) and more recently of Hunt (1941) has emphasised the importance of changes in and around the smaller blood-vessels in scurvy and the prescorbutic state, and there is evidence that significant alterations in the properties of capillary walls occur as the result of deficiency of vitamin P in man (Armentano et al 1936, Scarborough 1939) and in the guineapig (Bacharach et al 1942a and b)

The wall of a capillary will rupture if sufficient force is applied to it, in the case of a skin capillary the small hæmorrhage or petechia can be observed with the naked eye Stress can be applied to skin capillaries by two methods and the capillary fragility (or resistance) measured in two ways Procedures employing the "positive-pressure principle" make use of the fact that, during venous occlusion intracapillary pressure rises in tissues distal to the point of occlusion, this rise may be sufficient to rupture skin capillaries, and the capillary resistance may then be assessed in terms of the number of petechiæ counted in a given area after the circulation has been restored In methods based on the "negative-pressure principle" the capillaries are ruptured by means of suction applied to their walls through the skin, and the capillary resistance is usually measured in terms of the suction (mm Hg negative pressure) required to produce one or more petechiæ in the area under examination

It has usually been assumed that the methods based on these two principles give directly comparable results since they measure the same function—the resistance of the capillary walls to stress There are, however, reasons for doubting this *assumption* With negative-pressure methods, for example, the amount of suction acting on the capillary walls might be expected to depend to some extent on the thickness and elasticity of the skin, and in practice this is found to be the case Further, since the end-point in negative-pressure methods is the appearance of a single petechia or at most three or four, it may be objected that only the very weakest vessels are being investigated and this in only a very restricted area Results with the positive-pressure methods may be considered more representative of the capillary population as a whole, since a much greater number of capillaries are subjected to stress and the area over which petechiæ are counted can be larger There is still another important difference in the two methods, for with positive pressure the circulation through the capillaries is interfered with for periods up to 15 minutes, whereas the negative pressure is permitted to act for only 30–60 seconds Positive-pressure methods thus involve some degree of capillary anoxæmia, and furthermore the pressure to which the capillary walls are subjected is unknown and is not necessarily the same in all areas below the occluding band Lastly, there is no evidence that quantitative assessment of the fragility of the surface capillaries gives any indication as to the capillary fragility in the deeper tissues, nor has it ever been shown that capillary fragility is related to capillary permeability

Bell, Lazarus and Munro (1940), employing a positive-pressure method developed originally by Gothlin (1931), in an investigation on 310 apparently healthy medical students, were unable to show any effect of vitamin-P preparations in increasing capillary resistance Scarborough (1939, 1940), using chiefly a negative-pressure method described by him (1941), has obtained evidence in persons suffering from spontaneous, conditioned and induced vitamin deficiency states that vitamin-P preparations can increase capillary resistance which falls, or is found to be low, as the result of the lack of this material in the food The discrepancy between these observations may be due to the different types of clinical material used, but before making this assumption we thought it wise to make a direct comparison between the two methods on the same subjects

Two other groups of workers have compared the capillary fragility or resistance as determined by various positive- and negative-pressure methods In 130 children Brock and Malcus (1934) found a rough correlation between the results obtained by two methods but the findings were not treated statistically O'Hara and Hauck (1936) compared the two methods in 4 adults who were tested repeatedly over 10–14 weeks, Gothlin's method was used for the positive-pressure and the method of Dalldorf and Russell (1935) for the negative-pressure readings No correlation was found between the results obtained by the two methods

METHODS AND CLINICAL MATERIAL

The positive-pressure method of Gothlin (1931) was used exactly as described by Bell, Lazarus and Munro (1940) Petechial counts were made in a 6 cm circle in the antecubital fossa without the aid of a magnifier by two independent observers on both arms held about two feet from a 300 watt lamp The mean of the four observations was used for the statistical calculations The negative-pressure method was that described by Scarborough (1941) in which suction is applied for half a minute The capillary resistance was determined in three standard areas on the forearm, usually the right Area 1 and area 3 lay just below the antecubital fossa, while area 5 was at the wrist The results from each area have been used separately in the calculations which follow

Both methods were applied at the same session to 142 apparently healthy second-year medical students between the ages of 18 and 23 The capillary resistance was first determined by the negative-pressure method and immediately afterwards by the positive-pressure method

RESULTS

The results of the investigation are set out in table I In some individuals a very high negative pressure (500 mm Hg) produced no petechiæ, in others the critical pressure was accidentally over-shot so that several petechiæ were produced These results were discarded and accordingly the groups in table I always contain less than 142 The mean values are interesting since they were obtained with healthy young people and may be taken as standards of reference for the two methods There is a statistically significant but low degree of correlation between the results of the two methods in areas 1 (lateral side of the proximal forearm) and 3 (medial side of proximal forearm), the correlation in area 5 (distal forearm) is not significant With correlations of the low order obtained (0 29) it is not possible, with any degree of accuracy, to predict a negative-pressure reading from a given positive-pressure reading or vice versa If the data are treated as a grouped series according to the positive-pressure readings (or alternatively the negative-pressure readings) as in table II, the low correlation becomes more apparent

TABLE I—CORRELATION BETWEEN POSITIVE AND NEGATIVE-PRESSURE METHODS OF DETERMINING CAPILLARY RESISTANCE

—	No of cases	Mean	Standard deviation	r	Standard error (of r)	Significance
Pos pres (no of petechiæ)	113	4 0	3 5	− 0 22	0 094	+
Neg pres, area 1 (mm Hg)		283 8	63 8			
Pos pres (no of petechiæ)	103	4 1	3 7	− 0 29	0 099	+
Neg pres, area 3 (mm Hg)		340 1	78 1			
Pos pres (no of petechiæ)	92	4 3	3 8	− 0 15	0 105	−
Neg pres area 5 (mm Hg)		454 1	71 9			

Each of the tests is consistent within itself Scarborough, in some unpublished work, has shown that there is a correlation of + 0 80 to + 0 89 between the negative-pressure readings in similar areas on the right and left arms In the series reported here the correlation between readings in areas 1 and 3 is + 0 89 and between those of areas 3 and 5 + 0 77 Bell, Lazarus and Munro (1940) showed that the correlation between the findings on two arms tested simultaneously by Gothlin's method was + 0 66 and that between the findings in the antecubital fossa and an area further down the forearm was + 0 92

TABLE II—RESULTS CONSIDERED IN THE FORM OF A GROUPED SERIES

Positive pressure Readings			*Negative pressure Readings*		
Pos pressure (no of petechiæ)	Neg pressure (mm Hg) Mean of corresponding readings		Neg pressure, areas 1 & 3 (mm Hg suction)	Pos pressure (no of petechiæ) Mean of corresponding readings	
	Area 1	Area 3		Area 1	Area 3
0–1 75	279 4	367 2	Up to 200	4 75	3 33
2–3 75	302 7	345 2	225–300	3 91	4 66
4–7 75	278 3	342 6	325–400	2 95	3 57
8 and over	246 4	333 6	Over 400	1 20	2 93

CONCLUSIONS

It is evident from the low correlation that the results obtained in this group of 142 apparently healthy medical students by a positive- and negative-pressure method are not comparable The problem as to which of the two methods is to be preferred is not brought nearer solution by this work, nor does it throw any light on the relative importance of vitamins C and P in increasing the resistance of capillary walls There seems to be a belief that the solution of the latter problem lies along chemical lines Chemical procedures, however, give little information beyond that concerning input and output, and are as a rule unable to decide how and how much a subject is affected by his altered or deficient diet Such considerations will continue to apply even if—in addition to those already available for ascorbic acid—effective chemical methods are devised for determining the concentration of vitamin P in organic fluids Some physiological method of detecting deviation from the normal is essential, with the present available knowledge tests of capillary fragility seem, in our opinion, to offer the best approach

SUMMARY

The capillary strength was tested in 142 healthy students by negative- and positive-pressure methods

The results obtained by the two methods gave a correlation which, though significant, was low

The tests were consistent within themselves, but, because of the low correlation between them, the results given by the two methods are not comparable

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VITAMIN-C NUTRITION

IN THE ROYAL NAVY AND IN A SECTION OF THE CIVILIAN POPULATION DURING WAR-TIME*

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THE occurrence of sore and bleeding gums in naval ratings and trawler crews engaged on naval duty attracted official notice in 1940, chiefly because these men were being clinically labelled scurvy, or subclinical scurvy, without adequate investigation At the time the question of a diminution in vitamin C in war-time diets was being much discussed, and the authorities resolved to investigate the state of vitamin-C nutrition in the Royal Navy The investigation was carried out chiefly by assessing the tissue reserves of ascorbic acid, using the saturation test of Harris and Abbasy (1937) but other methods are also discussed It was clearly desirable to contrast the results in naval ratings with those of the civilian population, and a group of men of similar age and social status fully engaged in war-work in a large motor-engineering works provided this control We were also fortunate in being able to collect 9 cases of fully developed scurvy in the wards of the Western Infirmary, Glasgow, during the time the naval investigation was in progress Observations on these patients amplified and checked our work on the naval ratings and healthy civilians It is not considered that the 9 examples of genuine scurvy in adults, seen within a period of 1½ years, represent any increase due to war conditions They were collected to aid our work, and would ordinarily have been treated in a number of different hospitals

DETAILS OF OBSERVATIONS

In the two groups, 392 ratings, comprising representatives of the crews of destroyers, corvettes, trawler mine-sweepers, depôt ships and submarines, and 176 male civilians were examined in the spring and autumn of 1941

General Dietetic Inquiry—Careful inquiry into the dietetic habits of the two groups was made, and each man appeared to be taking an average well-balanced diet in which the vitamin C was derived chiefly from potatoes and vegetables Attempts to calculate the vitamin C content of individual diets for comparison with the results of the saturation test were soon abandoned, since, as Ungley (in another part of this investigation) and others have shown, it is impossible without complete control of the man and accurate weighing and testing of the diet to know the actual vitamin-C content of the food as cooked and eaten

Clinical Observations—All the naval ratings and civilians appeared to be in good health Particular attention was paid to the state of the mouth and gums in 118 naval ratings, among whom we were fortunate in being able to include men of different nationalities There were 72 British, 12 Canadian, 16 Royal Indian Navy, 12 French, and 6 Polish ratings In 6 men (5 British and 1 Pole) swollen and painful gums which bled easily on pressure were detected at an examination in late autumn The teeth of the British and French ratings were moderately satisfactory, but dental attention was required in a number of them. In the Canadians and Poles dental fillings were numerous, but the teeth were in good condition The teeth and gums of the men of the Royal Indian Navy may fairly be described as perfect

Saturation Test—The method of Harris and Abbasy (1937) was applied to all the 392 naval ratings and 141 civilian engineers, which involved a series of over 1000 individual tests in the spring and autumn of 1941

The test dose chosen was 700 mg of pure ascorbic acid, dissolved in water This was taken by mouth, and urine was collected from the end of the third to the end of the sixth hour (standard three hour period) The volume of urine excreted in the standard time was measured and 9 c cm of urine was immediately added to 1 c cm of glacial acetic acid in a test-tube The ascorbic acid content of the sample was estimated by titration with the dye 2,6-dichlorophenolindophenol The test dose was repeated daily until " saturation " was indicated by a sharp rise in the urinary excretion of ascorbic acid, and the amount of ascorbic acid required was taken to be inversely proportional to the original tissue reserves of vitamin C The results of the tests were interpreted as follows

Urinary output of ascorbic acid in standard three hour period (mg)	Degree of saturation of tissues
More than 50	Complete saturation
20–50	Almost complete , full saturation with next dose
5–20	Saturation approaching , complete in one or two doses
Less than 5	Incomplete saturation , no measure of tissue reserves possible

The complete results are shown in table I, which has been condensed to save space It is shown that a progressive increase in the percentage of men saturated occurs after each successive test dose and that less ascorbic acid is required (about 700 mg) for saturation in the autumn than in the spring Three test doses (2 1 g) and four test doses (2 8 g) were required to saturate the majority (60–70%) of naval ratings and civilians respectively in the autumn, as compared with five test doses (3 5 g) for both groups in the spring In both the naval ratings and civilian engineers there was a wide variation in the number of test doses required for saturation, but on the average the sailors required one test dose (700 mg) less than the civilians in the autumn, while in the spring there was no significant difference between the two groups None of the men observed any improvement in their physical condition after saturation and no relation could be established between the number of test doses required for saturation and age, body-weight, type of work or time at sea No difference was observed between representatives of the crews of depôt ships, destroyers, corvettes and submarines A sufficient number of complete results was not obtained with the crews of trawler mine-sweepers who did not take kindly to the delay required for testing on reaching port On the evidence available, however, they were a little below the naval ratings

The lower reserves of ascorbic acid observed in the spring in both groups is considered to be due mainly to the progressive deterioration in the ascorbic acid content of potatoes occurring throughout the winter and spring (Olliver 1940)

Of the 6 sailors found to have sore and bleeding gums in November, 1941, 1 was saturated and 2 almost

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* This is one part of an investigation undertaken in 1940 at the request of Surgeon Vice Admiral Sir Percival Nicholls, Medical Director-General of the Navy and aided by a special financial grant from the Board of Admiralty The work was carried out by observers in three areas of Scotland in which local circumstances provided different lines of approach to the same problem—the occurrence of sore and bleeding gums in men of the Royal Navy and auxiliary vessels In one area a comparison of the state of vitamin-C nutrition in sailors and civilians was undertaken, and is reported here In a second area, observations and experiments in men with sore and bleeding gums were made under controlled conditions in the wards of a Naval hospital and diets were carefully checked in men actually serving in small ships In a third area the frequent presence in port of many small vessels of the trawler minesweeper class made possible extensive dietetic surveys It is expected that the other parts of the investigation will be published in due course

TABLE I—ASCORBIC ACID SATURATION TEST (SUCCESSIVE DAILY TEST DOSES)

No of test doses (700 mg) reqd	Total no of men	Season and group*	Men with various levels of urinary ascorbic acid (mg) during the standard three hours				Per cent saturated
			Less than 5	5–20	20–50	More than 50	
1	208	Spring N	191	14	3	0	0
	89	„ C	89	0	0	0	0
	52	Autumn C	42	5	2	3	6
2	41	Spring N	29	11	1	0	0
	86	„ C	78	6	0	2	2
	14	Autumn N	6	6	0	2	14
	47	„ C	21	13	6	7	15
3	49	Spring N	17	17	11	4	8
	82	„ C	53	16	5	8	10
	28	Autumn N	2	5	2	19	68
	41	„ C	3	15	10	13	32
4	42	Spring N	4	11	8	19	45
	73	„ C	10	29	6	28	38
	13	Autumn N	0	0	1	12	92
	29	„ C	0	3	5	21	72
5	27	Spring N	1	4	4	18	67
	47	„ C	0	9	11	27	57
	8	Autumn C	0	0	0	8	100

* N = naval ratings, C = civilian engineers

saturated after one test dose of ascorbic acid The remaining 3 required three test doses before saturation was attained The ratings of the Royal Indian Navy whose teeth and gums were perfect required more ascorbic acid for saturation since none of them was saturated after three test doses Oral hygiene among these men was excellent They used their own method of cleaning teeth and gums by first chewing the end of a twig and then using the chewed end as a tooth and gum brush

Capillary Resistance Test —This test has been claimed to be of value in the diagnosis of vitamin-C deficiency by Öhnell (1928), Göthlin (1933), Stocking (1933), Daldorf (1933), Bell, Lazarus and Munro (1940), but has been condemned as unsatisfactory by Greene (1934), Abt, Farmer and Epstein (1936) In the present investigation the capillary resistance test has been compared with the saturation test in a series of 59 healthy adults The tests were all carried out in the laboratory and not " in the field," so that only 24 naval ratings are included The remaining 35 comprised doctors, medical students, laboratory technicians, hospital workmen and porters

TABLE II—CAPILLARY RESISTANCE TEST

Method	No of men	No of petechiæ			
		Antecubital fossa		Wrist	
		Range	Mean	Range	Mean
Positive pressure	Saturated, 9	0– 9	3 0	0–3	0 3
	Unsaturated, 29	0–14	2 9	0–3	0 4
Negative-pressure	Saturated, 17	0–100	26	0–2	0 4
	Unsaturated, 42	0–100	22	0–5	0 8

Two methods of carrying out the test have been employed—the positive- and negative pressure methods In the positive pressure method a sphygmomanometer cuff, placed round the arm above the elbow, is maintained at a pressure of 80 mm Hg for 5 minutes and then released In the negative pressure method a suction chamber is applied to a standard area of skin for one minute, the suction exerted being 100 mm Hg below atmospheric pressure The standard areas selected were (*a*) the centre of the antecubital fossa, and (*b*) one inch above the anterior aspect of the wrist A circle, one inch in diameter, was stamped on the skin at these sites, and after the test the number of petechiæ within the circle were counted with the aid of a lens in good light The two methods—positive and negative pressure—were generally carried out simultaneously on the right and left arm of each individual

From the results shown in table II the range and mean number of petechiæ were, for all practical purposes, similar in saturated and unsaturated alike Consequently no relation could be established between the capillary resistance test, assessed by the positive- and negative-pressure methods, and the tissue reserves of ascorbic acid estimated by the saturation test

Nine Patients Suffering from Scurvy —In these patients the only constant clinical manifestations of the scorbutic state were perifollicular hæmorrhages and extensive purpuric hæmorrhage in the lower limbs Perifollicular hyperkeratosis of the skin, especially of the legs, often referred to in scurvy, was present in the majority; but we are not convinced that this is an essential feature of scurvy. The possibility of its relation to persistent uncleanly habits cannot in our opinion be ruled out, and all 9 patients had been very neglectful in their personal hygiene We also wish to emphasise strongly that spongy and bleeding gums are not essential for a diagnosis of scurvy, and they did not occur in our edentulous patients All 9 patients had taken grossly defective diets, potatoes and vegetables being practically absent for a minimum period of four months before the onset of symptoms The capillary resistance test (positive-pressure method) was abnormal in only one out of 5 cases examined All 9 patients were rapidly cured by administration of ascorbic acid

DISCUSSION

It is generally agreed that potatoes and vegetables are the basic sources of vitamin C in this country In peace-time this was supplemented in some sections of the community by the regular consumption of citrous fruits In war-time this has been impossible, and a deterioration in the response to the saturation test in these groups has been observed by Francis and Wormall (1942) The whole population is thus now reduced to a more uniform and level state of vitamin-C nutrition, derived from the two main basic sources The occurrence of scurvy in healthy adults is unknown when potatoes and vegetables are eaten daily, and so long as the supplies of these foods are adequately maintained and consumed in sailors and civilians, scurvy cannot occur in epidemic form In the present investigation a state of vitamin-C nutrition far short of saturation was found to be compatible with good health, and no improvement in physical well-being was observed after saturation There is good evidence that vitamin C plays an important part in the healing of wounds, and that in such circumstances high tissue-reserves of ascorbic acid are beneficial (Lund and Crandon 1941) We suggest, and hope later to provide supporting evidence, that vitamin C may be chiefly concerned with reparative processes in the body and that scurvy appears only when the tissue reserves have become so depleted as to be unable to cope with ordinary wear and tear

Our results seem to show that in adults, both in the Royal Navy and among civilian workers, the levels of vitamin-C nutrition are adequate for good health, and we conclude that the causation of sore and bleeding gums in ratings of the Royal Navy is not vitamin-C deficiency.

SUMMARY

The majority of 392 Royal Naval ratings and 176 civilian engineers, whose main sources of vitamin C were potatoes and vegetables, required respectively three and four test doses of 700 mg ascorbic acid for saturation in autumn, as compared with five test doses for each in spring

Six naval ratings showed sore and bleeding gums out of 118 tested, but we were unable to associate this with vitamin-C deficiency The ratings of the Royal Indian Navy had lower tissue-reserves of vitamin C, yet their teeth and gums were perfect It is considered that good oral hygiene was of major importance in maintaining the healthy state of their teeth and gums

The capillary resistance test was found to be of no value in assessing the state of vitamin-C nutrition No relation could be established between the number of petechiæ induced and the results of the saturation test Moreover the test was positive only in one of 5 patients with fully developed scurvy

We conclude that in healthy adults, relying almost entirely on potatoes and vegetables for vitamin C, a state far short of saturation is the rule, and that provided the present standard of diet is maintained no outbreak of scurvy is likely to appear

It is suggested that, in adults at least (we are not considering growing children), vitamin C is mainly concerned with tissue repair, and that in health and ordinary circumstances of service and work the maintenance requirements of this vitamin are small but have not yet been accurately determined

We wish to thank Temporary Surgeon Rear-Admiral J W McNee, consulting physician to the Royal Navy, who controlled the different parts of the investigation, for advice and criticism We are indebted to officers and men of the Royal Navy and to Albion Motors Ltd for their cooperation, and to the physicians of the Western Infirmary, Glasgow, for access to patients suffering from scurvy.

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EPILEPSY*

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A LARGE number of electroencephalographic studies have been made on epileptic patients for some years past This method of studying the brain arises from the work of Berger (Jena) who in 1929 published record of changes of electrical potential in the human brain Later Adrian and Matthews and Grey Walter in this country confirmed his observations, Adrian demonstrating that the alterations in electrical potential arose in the normal subject from an area in the occipital lobes connected with vision The recording of very small electrical changes is now possible In most people, with electrodes applied to the intact scalp, the only part of the brain from which recognisable waves can be elicited is the occipitoparietal visual association area and then only as a rule when the eyes are closed

The Electroencephalogram

This normal rhythm of electrical discharge is called the alpha rhythm and has a frequency of about 10 waves per second, the frequency being remarkably constant for the individual In many organic pathological lesions of the brain the rhythm and form of the waves are materially altered, so-called delta waves appear, with a frequency of less than about 7 per sec, and these often have a larger amplitude than the normal alpha waves By recording waves simultaneously from several places the focus of origin of the abnormal waves can often be discovered and a lesion thereby localised

In epilepsy two distinct EEG abnormalities must be noted first, in many patients, an abnormal rhythm may be constantly present between attacks (a resting or interparoxysmal abnormal rhythm), secondly, in all patients during convulsion or other type of epileptic seizure, there is in addition another form of abnormal rhythm characteristic of the particular type of seizure taking place A resting or interparoxysmal abnormal rhythm is found in a large proportion of epileptic subjects, but unfortunately from the point of view of diagnosis not in all those who are on clinical grounds undoubted cases of genuine epilepsy The proportion has been variously estimated Golla and Grey Walter place it at about 50%, Williams at about 60% Earlier American estimations placed the proportion much higher, thus Jasper and Kershman reported abnormalities in over 95%, while Lennox Gibbs and Gibbs found that only about 8% of their patients with overt seizures had normal EEGs Such discrepancies are in part accounted for by differences in standards taken as normal This is a new method and time is required before all workers reach agreement on a norm The resting or continuous abnormality consists of a delta type of wave, larger and proceeding at a slower rate than the normal alpha rhythm In cases of major epilepsy or grand mal it has been shown that these abnormal discharges arise most often from a focus in the middle part of the superior and middle frontal convolutions In petit mal the focus is often postcentral, while in pyknolepsy in children it appears to be in the occipital poles

In many patients, especially those whose attacks are mostly minor, the amplitude of these resting delta waves can be much increased by overbreathing; in some cases after hyperventilation of the lungs apparently normal waves may take on abnormal forms A lowered blood sugar has also been shown to increase the size of abnormal rhythms (Golla and Walter) The age of the patient seems to affect the incidence of this resting abnormality Golla and Walter state that few patients over the age of 40 will be found to exhibit it, but a high proportion of patients below the age of 20 do so An increase in the size of these delta waves in a known epileptic subject indicates that an attack will develop in the near future, in fact attacks have been accurately foretold, even in the absence of any subjective warning or premonition on the part of the patient The abnormal EEG records obtained during actual epileptic seizures vary, particular varieties being characteristic of grand mal, petit mal and psychical attacks In grand mal the waves are much increased in frequency, from the normal of about 10 per sec up to 25 or 30, are generally of larger size than normal and often show a spike, in petit mal there is a peculiar mixed rhythm, consisting of some slow waves with a rounded or flattened top and of other spiky-topped waves moving at a faster rate, psychical attacks are characterised by a smooth and slow discharge Thus in major epilepsy the cortical discharges seem to be abnormally rapid and in psychical attacks abnormally slow, while in petit mal there is an alternating fast and slow discharge Putnam and Merritt have been able to correlate the bouts of periodic dullness in some epileptic patients with the presence of an abnormal rhythm consisting of slow square-topped waves similar to those found as part of the picture in petit mal attacks

Bromides and phenobarbitone given intravenously while records are being taken produce a decrease in the rate of the cortical discharges, hence on this evidence they should be in theory as valuable in the treatment of major epilepsy as they are in practice The same drugs slow still further the rate of discharge in psychical attacks, while in petit mal their effect is uncertain, here again the experimental findings agree with clinical experience On the other hand, the resting abnormality found in about 50% of epileptic patients is but little affected by sedative drugs Golla and Walter, however, state that it is sometimes abolished by disodium diphenylhydantoinate, which in these cases also controls the attacks What contribution can be made by the EEG towards the diagnosis in a doubtful case of supposed epilepsy? First, a normal record in a patient during a period of freedom from an attack does not exclude the diagnosis of epilepsy Secondly, an abnormal EEG, either in the resting phase or obtained by overbreathing in a patient liable to recurrent attacks of uncertain nature, in whom no definite signs of an organic lesion of the brain are forthcoming, affords strong presumptive evidence that the attacks are epileptic, even if no account of them can be provided by an eyewitness Thirdly, the nature—whether epileptic or hysterical—of a fit or attacks may be determined by a record taken during the actual attack

Williams has reported on the EEG records in cases of acute head injuries and in the chronic states following them In the immediate post-traumatic period the epileptic type of dysrhythmia is seen but seems to have no prognostic significance in regard to the development of epilepsy later, and only indicates the presence of cerebral tissue which is abnormal as a result of the injury In cases where traumatic epilepsy did develop, the pattern of the EEG was similar in all respects to that obtained in idiopathic grand mal epilepsy, and it does not seem possible to predict, by EEG studies made during recovery from the injury, the development later of traumatic epilepsy Grey Walter states that the type of EEG peculiar to ordinary petit mal is not produced by injuries.

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* Extracts from three Lettsomian lectures delivered at the Medical Society of London in July, 1942 The lecturer dealt also with fits associated with other organic disorders, and with clinical varieties of the idiopathic disease, its periodicity, postconvulsive phenomena diagnosis and treatment. The lectures will be published in full in the *Transactions* of the Medical Society

In view of the recognised hereditary factor in epilepsy investigations were indicated of the apparently healthy relatives of epileptic patients, and on healthy people in none of whose relatives epilepsy was known to exist. Critchley and Williams noted some time ago that in two pairs of identical twins the EEGs were pathognomonic of epilepsy, though in each pair only one member had epilepsy. Lowenbach investigated 37 relations (none of whom had ever shown clinical epilepsy) of 11 epileptic patients and found that 17 had abnormal EEGs. Lennox, Gibbs and Gibbs took records of 183 persons closely related to 94 epileptic subjects, of these only 2.2% had shown epileptic seizures. Of the 183, 60% had abnormal EEGs, or as these writers term it cerebral dysrhythmias. Compared with these a control group of 100 persons chosen from families believed to be free from epilepsy showed abnormal records in only 10%. Lennox and his colleagues also investigated both parents of 55 epileptic patients and in 35 instances found the records of both parents to be abnormal, while in as many as 95% the EEG of one parent was abnormal, in only 5% were the records of both parents normal. These workers also found dysrhythmias similar to those in the parents of epileptic patients in children with behaviour disorders and in many schizophrenic patients. Thus in addition to people who show both clinical epilepsy and resting cerebral dysrhythmias, a much larger group display the EEG abnormality only. In the series studied by Lennox and his colleagues, the cases of abnormal EEG without clinical evidence of epilepsy outnumbered the overt cases of epilepsy by 20 to 1.

More work is required before this cerebral dysrhythmia can be accepted as specific to epilepsy, but enough has been discovered to suggest that such dysrhythmia indicates a genetic fit-disposing character (Golla and Walter). Thus the existence of a hereditary or constitutional factor in epilepsy receives strong support from all these investigations. This work seems to afford some help in the always difficult task of advising on the questions of marriage and parenthood in epileptic patients. It is clear that if an epileptic patient marries he should select a spouse with a normal EEG, the offspring of such a union are much less likely to have epilepsy than the offspring of parents who both show cerebral dysrhythmias, even although neither has had clinical epilepsy. From their studies in America Lennox and his colleagues estimate that people with epileptic predisposition, as evidenced by cerebral dysrhythmia, constitute about 10% of the community. We might therefore look forward to a normal EEG being required as an essential condition before marriage, just as a negative WR is already so required in some communities.

Critchley asks what factors will convert an epileptic predisposition into clinical epilepsy. This question is bound up with that of the symptomatic epilepsy seen in cerebral disease, and with traumatic epilepsy. The answer can only be suggested in cases where there is pre-existing knowledge of the EEG of the patient. Again, if the EEG proves to be abnormal in a healthy person, is prophylactic treatment with any of the usual sedative drugs likely to be of value? On this point our present knowledge is not yet sufficient to justify a definite answer.

Visceral Variants

Abnormal visceral sensations are a well-recognised form of aura in many cases of major epilepsy. One of the commonest auræ is a peculiar almost indescribable epigastric sensation; other common varieties are a choking feeling, like suffocation, a tightness in the chest, palpitations, sometimes nausea. Such abnormal sensations may sometimes constitute the sole content of an attack, but in others the morbid sensations may be followed by objective manifestations affecting chiefly the heart, the vasomotor system and sometimes the respiratory system. The most striking example of this epileptic variant—for I unhesitatingly place it in that category—is the condition described by Gowers (1907) under the name of the vasovagal attack. Unfortunately the term vasovagal syncope has been more recently applied by Lewis to what have been called for years "fainting fits," and some slight confusion in nomenclature has been caused. I must make it quite clear that the following remarks apply to the type of attack described by Gowers and later by Ryle.

Both writers refer to the type of case earlier described by Nothnagel as angina vaso-motoria. The condition is in my own experience decidedly rare and it is surprising that Ryle has encountered as many as 93 cases. Attacks affect both sexes, but unlike ordinary epilepsy seem to be unusual below the age of about 25, most patients are over the age of 30. I have yet to encounter a case in childhood, or adolescence, although epilepsy in other forms is so common in those periods of life. It is very probable, as Ryle suggests, that many of these attacks have in the past been erroneously regarded as heart attacks, and on their first appearance possibly even as examples of coronary thrombosis. The patient has any or all of the following symptoms: a peculiar and severe sense of prostration, shows immobility, extreme subjective and objective coldness, the limbs exhibiting a marble-like chill, a sense of constriction in the chest with difficulty in breathing, sometimes pain, seldom very severe and often better described as a discomfort substernally and sometimes in the arms as well, resembling in distribution the pain of a true angina pectoris, pallor of the face; change in the pulse, which generally becomes slow (as low as 50 or 40) but which occasionally definitely accelerates, shallow and rapid respirations, occasionally mild tetany, almost certainly due to the hyperventilation. To this picture must be added what Ryle considers one of the striking symptoms, an anguor animi—the sensation of impending death, terrifying to the patient and so intense in many patients that it persists in every succeeding attack, although experience has denied the reality of the threat. Passage of a large amount of dilute urine often follows an attack.

It is not surprising that the first, at any rate, of such attacks should be regarded by a medical observer as a serious heart attack or be thus classified by a doctor consulted later by the patient. The more benign nature of the condition can as a rule only be established by its repetition without other ill effects. Although the periodic incidence of these attacks without evidence of any organic disease might in itself suggest an epileptic foundation, there is other evidence to support this connexion, which also tends to confirm the hypothesis that this vasovagal syndrome is due to a "low level" epileptic discharge arising in medullary centres.

Gowers observed the combination of vasovagal attacks and epilepsy in 2 patients, and its connexion with migraine in other cases. Ryle refers to a case in which a vasovagal attack was always followed later in the same day by a true epileptic seizure. He also quotes Symonds who observed 2 patients with attacks of the vasovagal type, including the anguor animi, of whom one presented signs of a tumour of the medulla oblongata and the other was a case of neurosyphilis in which autopsy disclosed miliary gummata of the medulla.

Kinnier Wilson proposed the term periventricular epilepsy for a type of disorder localised chiefly in neurosympathetic ganglia round the ventricles, mainly the third and fourth. He pointed out that though such attacks, including the vasovagal type, last as a rule longer than those of ordinary epilepsy, they may be quite brief, and that the onset, usually slower than that of most cases of epilepsy, may at times be quite sudden. That this type of attack—vasovagal or medullary epilepsy—may be associated with other and more common types is exemplified by a case now under my observation.

A big strong man now aged 33 suffered from the age of 14 from occasional attacks of what appear from the description to have been typical petit mal. In the last year however his attacks have become more frequent and of a different kind. These are slow in their development, he wakes in the morning feeling depressed and low, after some hours—usually about midday or in the early afternoon—the attack comes on with an uncomfortable sense of constriction in the chest, sometimes amounting to real pain, and a feeling of suffocation. He feels chilly and his hands become cold. He has time to lie down before he loses consciousness for a very short period, in which however he is seen sometimes to become stiff for a moment, there are never any convulsive movements. On recovering consciousness he has a headache, and is collapsed with icy cold hands and feet and a feeling of complete prostration He also has amnesia for all that has happened from the onset of the attack A doctor called in to see him after two of these attacks felt sure that he must have had a severe heart attack, for his pulse was almost imperceptible and the extremities icy cold In spite of this his general health is excellent and a recent complete physical examination supported by X-ray examinations of the skull and heart, a cardiogram, examinations of the blood and cerebro spinal fluid, and a blood sugar estimation have all failed to reveal any organic basis for the attacks The frequency of the attacks has been lessened by full doses of phenobarbitone

Traumatic Epilepsy

Besides being important in war-time, traumatic epilepsy is common in civilian practice, chiefly as a result of motor accidents

AFTER GUNSHOT INJURY

Figures of the incidence of epilepsy following gunshot wounds of the head are available from the last war, in 1920 the records of the Ministry of Pensions showed that out of 18,000 cases of such wounds 4 5% had developed epilepsy. In France Behague found epilepsy in 12 1% of 3523 cases These figures, however, do not distinguish between the incidence of epilepsy in wounds with, and wounds without, perforation of the dura mater Other statistics of the incidence of epilepsy after gunshot wounds of the head giving information on this point are those of Rawling, Steinthal and Nagel, and Credner and Wagstaffe All these observers are agreed in finding a greater incidence of epilepsy with wounds penetrating the dura mater

Thus Rawling reported in a series of 452 cases of gunshot wounds of the head of all types an incidence of epilepsy in 25%, and in 228 cases with penetration of the dura an incidence of epilepsy in 32 8% Steinthal and Nagel found an incidence of 28 9% in a total of 639 cases, and an incidence of 31 6% in 348 cases with penetration of the dura Credner gives an incidence of 38 2% in a total of 1990 cases, and of 49 5% in 1234 cases with dural penetration Wagstaffe's figures were an incidence of 9 8% in a total of 377 cases, and an incidence of 18 7%—nearly double—in 176 cases with dural penetration

Ascroft has recently published his findings in 317 patients receiving pensions for gunshot wounds of the head, the series excludes those who died as a result of their head injuries within 4 years, and those who received blunt injuries of the head and wounds of the cerebellum The series therefore comprises only the more severe types and contains a large proportion with wounds penetrating the dura mater He summarises his findings as follows

Of the 317 cases 107 (34%,) developed epilepsy Up to the end of the year 1940, 14 (4 4%) of the patients had died One and probably 2 others died of complications of the brain wound, the remaining 11 of intercurrent conditions In cases in which the dura had been penetrated fits were twice as frequent (45%) as in the scalp and skull wounds in which the dura was intact (23%) Scalp wounds due to missiles are more likely to be followed by epilepsy than are scalp wounds due to blunt injury There was no evidence that removal of metallic foreign bodies from the brain diminished the liability to epilepsy Prolonged wound sepsis, as indicated by delayed healing, favours the subsequent onset of epilepsy, both in cases in which the dura has been penetrated and in those in which the integrity of the dura has been preserved Epilepsy is more common after wounds affecting the sensoro motor cortex than after wounds of the polar region of the cerebral hemisphere The presence or absence of concussion (as judged by immediate unconsciousness) after gunshot wound does not influence the subsequent liability to epilepsy The first fit may occur within a few hours after injury, or may be delayed at least as long as 20 years Epilepsy begins more often in the first 2 weeks and thereafter the liability to epilepsy progressively diminishes In 30 of the 96 cases in which the course of the epilepsy is known fits ceased some years before the patient was last examined This subsidence of epilepsy occurred most often in cases in which fits began in the first fortnight after injury, less frequently when fits began within the first 2 years and never when the first fit occurred more than 2 years after the injury

Ascroft's investigation confirms the general opinion that epilepsy is more likely to develop after wounds penetrating the dura, but it is noteworthy that epilepsy developed in as many as 23% of cases in which the dura was not penetrated The types of epileptic attack included major convulsions without any obvious focal onset, attacks with a definitely focal onset in 31% of the cases and attacks of petit mal Accurate information about the date of onset of the epilepsy in relation to the date of wounding is given for only 84 of his cases In 56 of these epilepsy appeared within the first year, and in 19 of the 56 in the first month, of the remaining 28 patients, 10 developed fits in the second year, 4 in the third year, 4 in the fourth, 1 in the fifth, 6 between the sixth and tenth years, 1 between the eleventh and fifteenth years and 2 between the sixteenth and twentieth years after the original injury The site of the injury to the brain appears to have less influence upon the development of epilepsy than might have been expected, for though it is more common after wounds of the sensori motor cortex it may follow injury of any part of the brain, excluding the cerebellum, which rarely gives rise to epilepsy Ascroft's findings may be compared with those in 343 craniocerebral injuries, reviewed by Wolf, in German soldiers surgically treated in the war of 1914–18 In 1941 traumatic epilepsy was found to be present in about 23 3 of these patients, 120 of whom had had perforating bone wounds

IN CIVILIANS

The incidence of epilepsy after injuries in civilian life presents a brighter picture, chiefly no doubt because most of these are closed and not penetrating wounds, but again statistics vary considerably

Thus Brun in 221 cases of civilian head injuries found an incidence of epilepsy in 8% Schou found 4 5% in 200 cases, while Feinberg in an analysis of 47,130 cases of head injuries reported to an insurance company between the years 1919 and 1933 discovered only 50 cases of traumatic epilepsy (about 8 cases in 1000) Rowbotham's recently published figures on the incidence of traumatic epilepsy after "blunt" head injuries in peace time reflect, I think, the nearest approach to present day normal figures in these cases Of a series of 430, 11 developed epilepsy (2 5%) In every case the injury had been received not less than 5 years before the inquiry was made The incidence of traumatic epilepsy is definitely less after civilian injuries than after the injuries of war, and if fits (probably due to extradural, subdural or subarachnoid hæmorrhage) developing within a few days of closed civilian injuries be excluded, the incidence of traumatic epilepsy becomes still lower The type of epilepsy developing after closed injuries of civil life is most often the major generalised convulsion

Thus Symonds found that of 28 cases, 24 exhibited generalised attacks, the attacks were at first of the minor type in 11 cases and became of a major type later I too have noted this tendency to progress from a minor to the generalised major convulsion in several cases In Rowbotham's cases 2 out of 11 patients showed attacks of the petit mal type only Fits with a strictly focal onset and a typical spread of the Jacksonian type are not common after closed injuries, but when seen they may be brought about by a contrecoup lesion A man recently under my care sustained a fracture of the skull in the right frontal region with a temporary *left* hemiplegia, 5 years later he developed typical attacks of Jacksonian epilepsy beginning always in the right hand Occasionally the attacks became generalised with loss of consciousness Since the attacks were not controlled with sedatives operation was carried out and the left motor cortex explored A cystic condition with cortical atrophy was discovered, clearly the result of an old severe contrecoup injury at the time of the original injury to the right side of the skull

Nevertheless, traumatic epilepsy may follow closed injuries of civilian life whether there has been a fracture of the skull, or not In 3906 cases of fractured skull collected by Feinberg, epilepsy developed in 19 (about 0 5%), in 16,762 cases without fracture of the skull he found epilepsy in 24 cases (about 0 125%) It thus seems that the chances of the development of traumatic epilepsy are increased by skull fracture The time of onset of epilepsy after the injury—the latent interval—appears to be much the same with the closed as with the penetrating injuries, if we exclude the uncommon cases in which fits begin a few days after the injury In most cases fits appear during the first year, after about 18 months the liability seems to diminish rapidly

It is not easy to decide exactly what factor or factors really determine the origin of the epilepsy With fits appearing within a week or so of the injury hæmorrhage of some kind, whether extradural subdural or subarachnoid, must be the chief factor in closed injuries In penetrating injuries hæmorrhage may of course again play a part but the factor of infection has also been taken into consideration In late epilepsy a direct injury to the surface of the brain producing cicatricial changes with a neuroglial scar is the type of lesion most often found Why, then, should only a small proportion of cases develop epilepsy ? The answer to this question may be found in some constitutional factor—possibly a hereditary cerebral dysrhythmia

In cases where epileptic fits develop within a few days or weeks of injury, medicinal treatment should always be employed, whether surgical treatment is to be instituted or not The indications for operation in these early cases must be based on all the clinical features, for epileptic attacks alone are seldom sufficient reason for surgical exploration unless they are persistent and their nature points to a focal origin, such as local bleeding or suppuration or localised compression of the cerebral cortex In epilepsy developing later—which is commoner—the same general rule holds good medical treatment should be tried first and should be practised on exactly the same lines as already laid down for idiopathic epilepsy Many—and I am one—consider that all cases of severe head injury should be given a course of prophylactic treatment by sedatives even if no symptoms of epilepsy have appeared Unfortunately the EEG does not help us to decide which cases ought to receive prophylactic treatment, because cases of head injury with a definite cerebral lesion often show an abnormal EEG, which cannot be distinguished from that found in patients with ordinary epilepsy of the grand mal type , but if a patient shows such an abnormal EEG long after clinical evidence of an injury has disappeared, there is all the more reason to go on with prophylactic sedative treatment In most cases the lesions responsible for late epilepsy is a neuroglial scar which must be localised and completely removed with as little new surgical trauma as possible , only those cases are likely to benefit from operation in which the site of such a scar can be located, either from the nature of the fits or from the EEG or from ventriculography If a successful operation seems possible it should not be delayed too long, since if fits are repeated over a long period it becomes more difficult to get rid of them Dott considers that even with carefully selected cases operation is unlikely to benefit more than about half

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EHRLICH'S DIAZO REACTION AND SULPHAPYRIDINE

JOSEPH MORROW KENNEDY, M B BELF, D P H
MEDICAL SUPERINTENDENT OF LODGE MOOR HOSPITAL, SHEFFIELD, LECTURER ON INFECTIOUS DISEASES AT SHEFFIELD UNIVERSITY

I CAN find no reference in any of the English journals to the presence of a positive Ehrlich's diazo reaction in the urine of patients receiving sulphapyridine , but since the introduction of sulphapyridine treatment we have found the test useless for diagnosis and prognosis of infectious diseases Observations made on 50 consecutive patients at Lodge Moor Hospital suffering from various diseases and all treated with sulphapyridine showed a positive reaction in every case, even where only a small dose of the drug was administered

The reaction depends on the fact that if sulphanilic acid is acted on by nitrous acid diazosulphobenzol is formed, which unites with certain aromatic compounds present in the urine to form aniline colours What these compounds are remains unknown. The reaction with sulphapyridine apparently cannot be due to the sulphapyridine itself or to its acetylated form, for sulphapyridine is an σ-substituted pyridine derivative, and only β-substituted derivatives would be expected to give a diazo reaction It is more probably caused by some derivative of the drug, or of a substance produced in the body during the detoxification of such a derivative The reaction is invariably obtained in the urine even after small doses

When given to patients, neither sulphanilamide nor sulphaguanidine gave a positive reaction , and the reaction was also negative when sulphapyridine was dissolved directly in the urine The diazo test, though it has lost its original value, has become useful for deciding whether the patient has been given sulphapyridine before admission to hospital

The solutions used were saturated solution of sulphanilic acid in 5% hydrochloric acid , 0 5% solution of sodium nitrite , and strong liquid ammonia If, on the addition of these, the urine became dark red and the froth crimson the reaction was held to be positive , if the urine became just red and the froth was unchanged the reaction was held to be doubtful , no colour change, of course, meant a negative reaction

The reaction is usually positive within 12–18 hours of administration of the drug, but may vary within fairly wide limits which do not seem to be associated with the size of the dose , thus in one case in the series of 50 it was positive within 9 hours, when the patient had received 2 g , in another it was positive in 12 hours after 0 75 g , and in a third it only became positive after 3 days when a total of 8 g had been given The reaction remains positive while the patient is under treatment with sulphapyridine, and persists for 2 or 3 days afterwards In one case—the only one in which the drug was given intravenously instead of by mouth—it persisted for 5 days

Ehrlich's aldehyde reaction has been recorded as a method for the estimation of sulphanilamide by Werner [1] Ehrlich's diazo reaction is simple, and might perhaps form the basis of a method for determining the rate of excretion of sulphapyridine in the urine

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CASE OF LATERAL SINUS THROMBOSIS

A. G TRESIDDER, C I E, M S LOND
MAJOR, RAMC , EAR, NOSE AND THROAT SPECIALIST AT A MILITARY HOSPITAL

WE now possess a good knowledge of the conditions in which the sulphonamides will prove of value, but they are still being given in a haphazard manner to cases in which there can be no justification for their use In particular, they are still being used in diseases of the middle ear and their complications when they should either not be given at all or only after appropriate surgical measures have been adopted One of these conditions is thrombosis of the lateral sinus, and the following case is an example

On Aug 18, 1941, a gunner, aged 36, came to my outpatient department with the history that his illness began six days previously with severe deep seated pain in the left ear and a generalised headache He had been given a course of sulphapyridine, after which the earache quickly disappeared and the headache lessened

When I saw him there was no complaint of headache or earache, but there was a profuse offensive discharge from the left ear He said he had had a discharging ear for many years Examination showed a swelling of the whole deep meatus, particularly of the superior and posterior deep meatal walls, so that only a portion of the tympanic membrane was visible , this was reddened and showed a pulsating perforation There was no tenderness over the mastoid process The temperature was 100 4° F , and the pulse rate 96 per min There was well marked deafness, the conversational voice being heard only within 6 in

He was admitted to hospital and exploration of the mastoid was advised, but he declined surgical treatment on the grounds that the pain in the ear had disappeared and the headache was only slight and occasional On the second day after admission he had a rigor, and the temperature rose to 104 4° F , the pulse to 128 per min The patient looked ill, and the tongue was dry and covered with a brownish fur A tentative diagnosis of lateral sinus thrombosis was made, and operation was urgently advised, but the patient persisted in refusing to have an operation, arguing that the treatment which he had already received had greatly improved his condition, and that now all he required was rest On Aug 21 there was a second rigor and his temperature rose to 103 4° F A blood-culture taken on this date was sterile. During the next two days the temperature did not rise above 99° F and there was no pain or mastoid tenderness, but the clinical signs in the deep meatus remained as described above From the 24th to the 30th there was only an occasional rise of temperature, and no more rigors Major D L Greig, RAMC, radiologist to the tion He also has amnesia for all that has happened from the onset of the attack A doctor called in to see him after two of these attacks felt sure that he must have had a severe heart attack, for his pulse was almost imperceptible and the extremities icy cold In spite of this his general health is excellent and a recent complete physical examination supported by X ray examinations of the skull and heart, a cardiogram, examinations of the blood and cerebro spinal fluid, and a blood sugar estimation have all failed to reveal any organic basis for the attacks The frequency of the attacks has been *lessened by full doses of phenobarbitone*

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[1] Werner, A E A *Lancet* 1939, i, 18

Traumatic Epilepsy

Besides being important in war-time, traumatic epilepsy is common in civilian practice, chiefly as a result of motor accidents

AFTER GUNSHOT INJURY

Figures of the incidence of epilepsy following gunshot wounds of the head are available from the last war, in 1920 the records of the Ministry of Pensions showed that out of 18,000 cases of such wounds 4 5% had developed epilepsy. In France Behague found epilepsy in 12 1% of 3523 cases These figures, however, do not distinguish between the incidence of epilepsy in wounds with, and wounds without, perforation of the dura mater Other statistics of the incidence of epilepsy after gunshot wounds of the head giving information on this point are those of Rawling, Steinthal and Nagel, and Credner and Wagstaffe All these observers are agreed in finding a greater incidence of epilepsy with wounds penetrating the dura mater

Thus Rawling reported *in a series of 452 cases of gunshot* wounds of the head of all types an incidence of epilepsy in 25%, and in 228 cases with penetration of the dura an incidence of epilepsy in 32 8% Steinthal and Nagel found an incidence of 28 9% in a total of 639 cases, and an incidence of 31 6% in 348 cases with penetration of the dura Credner gives an incidence of 38 2% in a total of 1990 cases, and of 49 5% in 1234 cases with dural penetration Wagstaffe's figures were an incidence of 9 8% in a total of 377 cases, and an incidence of 18 7%—nearly double—in 176 cases with dural penetration

Ascroft has recently published his findings in 317 patients receiving pensions for gunshot wounds of the head, the series excludes those who died as a result of their head injuries within 4 years, and those who received blunt injuries of the head and wounds of the cerebellum The series therefore comprises only the more severe types and contains a large proportion with wounds penetrating the dura mater He summarises his findings as follows

Of the 317 cases 107 (34%,) developed epilepsy Up to the end of the year 1940, 14 (4 4%) of the patients had died One and probably 2 others died of complications of the brain wound, the remaining 11 of intercurrent conditions In cases in which the dura had been penetrated fits were twice as frequent (45%) as in the scalp and skull wounds in which the dura was intact (23%) Scalp wounds due to missiles are more likely to be followed by epilepsy than are scalp wounds due to blunt injury There was no evidence that removal of metallic foreign bodies from the brain diminished the liability to epilepsy Prolonged wound sepsis, as indicated by delayed healing, favours the subsequent onset of epilepsy, both in cases in which the dura has been penetrated and in those in which the integrity of the dura has been preserved Epilepsy is more common after wounds affecting the sensoro motor cortex than after wounds of the polar region of the cerebral hemisphere The presence or absence of concussion (as judged by immediate unconsciousness) after gunshot wound does not influence the subsequent liability to epilepsy The first fit may occur within a few hours after injury, or may be delayed at least as long as 20 years Epilepsy begins more often in the first 2 weeks and thereafter the liability to epilepsy progressively diminishes In 30 of the 96 cases in which the course of the epilepsy is known fits ceased some years before the patient was last examined This subsidence of epilepsy occurred most often in cases in which fits began in the first fortnight after injury, less frequently when fits began within the first 2 years and never when the first fit occurred more than 2 years after the injury

Ascroft's investigation confirms the general opinion that epilepsy is more likely to develop after wounds penetrating the dura, but it is noteworthy that epilepsy developed in as many as 23% of cases in which the dura was not penetrated The types of epileptic attack included major convulsions without any obvious focal onset, attacks with a definitely focal onset in 31% of the cases and attacks of petit mal Accurate information about the date of onset of the epilepsy in relation to the date of wounding is given for only 84 of his cases In 56 of these epilepsy appeared within the first year, and in 19 of the 56 in the first month, of the remaining 28 patients, 10 developed fits in the second year, 4 in the third year, 4 in the fourth, 1 in the fifth, 6 between the sixth and tenth years, 1 between the eleventh and fifteenth years and 2 between the sixteenth and twentieth years after the original injury The site of the injury to the brain appears to have less influence upon the development of epilepsy than might have been expected, for though it is more common after wounds of the sensori motor cortex it may follow injury of any part of the brain, excluding the cerebellum, which rarely gives rise to epilepsy. Ascroft's findings may be compared with those in 343 craniocerebral injuries, reviewed by Wolf, in German soldiers surgically treated in the war of 1914–18 In 1941 traumatic epilepsy was found to be present in about 23 3 of these patients, 120 of whom had had perforating bone wounds

IN CIVILIANS

The incidence of epilepsy after injuries in civilian life presents a brighter picture, chiefly no doubt because most of these are closed and not penetrating wounds, but again statistics vary considerably

Thus Brun in 221 cases of civilian head injuries found an incidence of epilepsy in 8% Schou found 4 5% in 200 cases, while Feinberg in an analysis of 47,130 cases of head injuries reported to an insurance company between the years 1919 and 1933 discovered only 50 cases of traumatic epilepsy (about 8 cases in 1000) Rowbotham's recently published figures on the incidence of traumatic epilepsy after "blunt" *head injuries in peace time reflect, I think, the nearest* approach to present day normal figures in these cases Of a *series of 430, 11 developed epilepsy (2 5%) In every* case the injury had been received not less than 5 years before the inquiry was made The incidence of traumatic epilepsy is definitely less after civilian injuries than after the injuries of war, and if fits (probably due to extradural, subdural or subarachnoid hæmorrhage) developing within a few days of closed civilian injuries be excluded, the incidence of traumatic epilepsy becomes still lower The type of epilepsy developing after closed injuries of civil life is most often the major generalised convulsion

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0 5 mg for cattle In South Australia, sheep affected by the wasting disease prevalent there showed, in addition to the features of the Western disease, a progressive ataxia The pathological changes in these animals were similar to those seen in swayback in England Investigators were able to show that there were really two pathological processes at work, cobalt deficiency producing the signs as seen in South Australia, and copper deficiency producing the ataxia The lack of cobalt and, where it occurs, the lack of copper, may be made good by an occasional top dressing of the pasture with the appropriate salts

Mr W Lyle Stewart, MRCVS (Newcastle-on-Tyne), described *sheep "pining"* in Great Britain It occurs most commonly in the uplands near the Scottish Border, and is characterised by anæmia and emaciation The routine treatment by the sheep farmers is to transfer the affected flock for a short time to new pastures It had been found that affected animals were frequently heavily infested with parasites The possibility that a nutritional factor might be involved was, however, not excluded Analyses of the pastures showed that they were of poor quality, being especially low in calcium, phosphorus and, to a lesser extent, cobalt Therapeutic trials showed that treatment either with anthelmintics or with mineralised coke affected a reduction in mortality but that the beneficial effect of both treatments exceeded that of either alone.—Mr E L Taylor, DVSc (New Haw), pointed out that the evidence suggested that deficiency of cobalt lowered the resistance of the animal to infestation with parasites He compared this to the known lowering of resistance to infections in vitamin deficiency and stressed the importance of establishing whether in fact trace elements did have such an action —Dr Green, however, quoted work in North Wales from which it appeared that deficiency of trace elements and infestation could occur independently as well as in combination

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The afternoon session, with Prof C R Harington, FRS (London), in the chair, opened with a discussion on *fluorine in human nutrition*—Miss M M Murray, DSc (Cambridge), who dealt with biochemical aspects of the subject, pointed out that fluorine was a normal constituent of teeth and bones, yet the effect of excessive amounts was to produce mottling of the teeth and osteosclerosis of the bones, especially the spine The commonest cause of mild fluorosis appears to be drinking water and the level above which effects are produced is about one part per million American work has suggested that mottled teeth are less prone to dental caries and work in England so far seems to bear this out Moreover sound teeth have been shown to contain more fluorine than carious teeth

Dr Dagmar Wilson (Oxford), in discussing the *clinical appreciation of fluorine distribution*, said it was likely that mottling of the teeth though mainly induced by fluorine, was affected by other nutritional factors Similarly, bony changes were not caused simply through fluorine intoxication but by the simultaneous action of nutritional factors or postural factors

Dr. Wilson also read a paper by Dr F H. Kemp (Oxford) on *radiological investigations* Osteosclerosis due to fluorine poisoning, seen fairly frequently in India, was characterised by tingling, pain and stiffness of the spine and often led to extreme cachexia or secondary infection. Radiologically, the spine showed synchondrosis and ossification of the transverse processes and of the intervertebral discs and wedging of the vertebral bodies In England, similar changes had been seen in the radiological examination of the spines of persons with mottled teeth and it was possible that these changes were also due to fluorine.

Mr Frederick Blakemore, MRCVS (Cambridge), contributed a paper on *industrial fluorosis of animals* in England Fluorosis which had first been described in cattle grazing near a superphosphate factory in Italy, had since been recognised in farm animals in many places Affected animals showed lameness, enlargement of the bones and cachexia. Smoke from superphosphate factories as well as glass works, brick works and aluminium factories contained appreciable quantities of fluorine The disease was more common in fields over which the smoke was carried by the prevailing wind Analysis of the urine and the bones of the diseased animals showed an increased amount of fluorine

The discussion on these four papers was opened by Mr C N Bromehead (H M Geological Survey) With Dr Wilson, he had examined areas in which fluorosis is known to occur, and so far the work shows that there is an association between the fluorine content of the soil or rocks and the occurrence of fluorosis

Dr H A Krebs (Sheffield) reported the result of an examination of workers in a fluoride factory Of 22 workers examined, 8 had evidence of osteosclerosis as shown, for example, by the high density of the bone In these cases, the fluoride excreted in the urine was also higher than in the normal—Dr H M Sinclair (Oxford) thought that the evidence was not conclusive that the osteosclerosis observed on routine examination was due to fluorine and Mr J D King, PhD (Millhill), said that in his experience fluorosis was associated not with less dental caries but with more.—Dr A C Frazer (London) asked if the fluoride in bone was as mobile as the calcium and whether parathyroid affected the turnover —In reply, Dr Murray said that the association of fluorosis with caries and with osteosclerosis observed on routine examination were by no means categorically established and more work was necessary

* * *

Mr W S Ferguson, AIC (Jealott's Hill), read a paper on *teart*, a molybdenosis of farm animals, which was found in 20,000 acres of Somerset as well as in many other parts It was characterised by excessive diarrhœa or "scouring," affecting cattle and to a lesser extent sheep The pastures were found to contain up to 100 parts per million of molybdenum, compared with the normal content of 5 parts per million The degree of scouring was proportional to the amount of molybdenum Old grass or hay were less toxic because less of the metal was in a soluble form Experiments had shown that the administration of molybdenum salts to normal animals produced a condition identical with teart. It was found that copper salts given as 2 g copper sulphate daily for 18 weeks were effective in controlling the disease —Mr S J Watson, DSc (Jealott's Hill), said that the Somerset war agricultural committee had issued copper sulphate to farmers this year and the results were very satisfactory —Mr E R Lewis suggested that the disease might also be controlled by growing legumes such as clover, which took up much of the element from the soil, or by making the soil more acid, since this resulted in less molybdenum being taken up by the pasture Mr K P Oakley referred to Vinogradoff's work on the molybdenum content of plants and animals The algæ of the laminaria group absorbed a great deal of the element and this possibly accounted for the large amounts of molybdenum in the lower lias

Miss E M Widdowson, PhD (Cambridge), read the last paper by Dr R A. McCance and herself on the *absorption and excretion of trace elements* To a large extent the elements behaved as one would expect from a knowledge of their chemical properties. Thus, if the diet contains substances which form insoluble compounds with the element concerned, less will be absorbed. An example is the effect of dietary phosphate or phytate on the absorption of calcium. Similarly, protein increased the absorption of calcium and magnesium because these metals formed soluble coördination compounds with amino-acids. Excretion by the kidneys was also determined by the solubility of compounds of the element It is difficult to determine the absolute amount of absorption of elements such as calcium, since apart from their occurrence in the food they were also secreted by the digestive juices; one could only determine the net absorption, that is the difference between the amount in the food and the amount in the fæces In some instances, one element might replace another of similar chemical nature; thus, lithium and sodium were to a large extent interchangeable Metals that form insoluble chlorides, such as silver and monovalent mercury, are not absorbed when taken orally since they are precipitated by the hydrochloric acid of the stomach Silver, however, may be absorbed from the mucous membranes of the mouth and nose and this accounts for the occasional cases of argyria seen to result from long-continued silver medication of these parts.—Mr. N L Kent, PhD, stressed that factors other than the chemical laws must hospital, reported that there was haziness of the mastoid cells on both sides, but the haziness was more definite on the left side On the 31st another rigor occurred, and rigors were repeated on Sept 1, 2 and 3, with accompanying temperatures of 104° F and 105° F On Sept 4 there was a very severe rigor and the patient now looked very ill There was a slight icteric tinge, his tongue was dry and furred, and his outlook, severely shaken by the repeated rigors, changed to one of anxiety, with the result that he volunteered to be operated on at once There was every reason for his anxiety because his general condition had much deteriorated since his admission to hospital 18 days previously Wasting was obvious, the facies was that of sepsis and the pulse was rapid and feeble

A Schwartze mastoidectomy was performed The bone was semi sclerotic, there was foul pus in the antrum, which communicated with a perisinus abscess The sigmoid sinus was exposed and opened and was found to contain a firm clot from the bend of the lateral sinus to the jugular bulb, but in no part had the clot broken down On account of the extension of the thrombosis to the jugular bulb, and because of the patient's antipathy to operative treatment which might lead to his refusal to undergo a second operation, I proceeded to ligature the internal jugular vein

After the operation the temperature rose only once to 100° F On Sept 18 the Schwartze mastoidectomy was converted into a radical mastoidectomy, and by Nov 18 the mastoid cavity had completely epithelialised, the hearing distance for conversational voice was now 12 feet No vertigo followed, and he was returned to duty

This acute exacerbation in a case of chronic otitis media well illustrates the type of case in which sulphonamides are contra-indicated as a sole preliminary form of treatment

I wish to thank Lieut -Colonel R H C Pryn, RAMC, officer commanding the hospital, for permission to publish this case

Medical Societies

NUTRITION SOCIETY

THIS society held their eighth scientific meeting at the London School of Hygiene on Oct 17 to discuss

Trace Elements in Relation to Health

At the morning session, the chairman, Mr J RUSSELL GREIG, PhD (Moredun Institute), gave a short *historical review* of the discovery of their importance by referring to the growth of our knowledge of the ætiology of pining in sheep Investigations over 100 years ago had concluded that the disease was not infectious but was related to the food Only after the conception of deficiency disease had become established was it thought that pining might be an example of dietary deficiency, and in 1922 the theory was advanced that it was due to a vitamin deficiency A few years later, the Australian disease of sheep, bush sickness, which was in many ways similar to pining, was said to be due to iron deficiency Similar conclusions were reached in England but further studies in Australia proved that the deficiency was one of cobalt Dr Greig stressed the possibility of the existence of partial deficiency of trace elements, analogous to the partial deficiency of vitamins

Mr H H GREEN, DSc (New Haw), discussing their significance in relation to diseases of *plants and animals,* said it was difficult to define clearly what was meant by a trace element The element appeared in a fairly high concentration in some organs and tissues and had an obvious essential function, like iron in the erythrocytes and iodine in the thyroid In other instances, the element was distributed throughout the tissues in small quantities so that it was difficult to say whether it had any function Other elements, such as copper, were essential in small quantities but toxic in large quantities Deficiency of copper and cobalt was well recognised in animals, and manganese, zinc, boron and fluorine also appeared to be essential Molybdenum and selenium on the other hand seemed to have only toxic properties

Mr R L MITCHELL (Craigiebuckler) talked of the distribution of trace elements in *soils and grasses* Unlike the major constituents of soils and rocks, the concentration of trace elements varied considerably, often as much as a million fold In igneous rocks, the trace element may gradually increase in concentration by chemical replacement of one of the other constituents It was more difficult to foretell the composition of sedimentary rocks The amount of a trace element in the soil which was available to the plant depended, with some elements, on the acidity or basicity of the soil, this meant that one could sometimes increase the availability simply by applying say ammonium chloride The amount taken up by a plant depended on the species but, for a given species, the ratio between the amount in the plant to that in the soil was fairly constant

Dr T MANN (Cambridge) in a paper by Prof D Keilin, FRS and himself on copper, zinc and other trace elements in relation to *physiological function and enzyme systems* suggested that the essential elements were those found in the ash of milk The first stage in establishing the function of a possibly essential element is to discover the compounds in which it existed in the body Copper, for example, was long known to form part of the molecule of hæmocyanin, the respiratory pigment of crustacea But in the mammal, it was thought to exist in the erythrocytes in an inorganic form But Professor Keilin and he have shown that it was present as a copper-protein compound, hæmocuprein This substance was found not only in erythrocytes but in the liver and in other tissues It also occurred in plants and was responsible for the darkening of the cut surface of plants as it was a constituent of the oxidase systems Zinc formed part of the enzyme carbonic anhydrase which played an important part in the transport of carbon dioxide and in the acid-base equilibria of the body. It was possible that zinc occurred in combination with other proteins forming substances with other actions The high activity of these metal-protein compounds could be judged by the fact that 0 1 μg of carbonic anhydrase, containing 0 003 μg zinc, could be detected biologically It was quite impossible to detect such an amount of zinc by chemical or spectrographic means Although deficiencies of the metal component of these protein compounds were well recognised, it was possible that deficiency also existed of the protein, if this were true, a fall in hæmoglobin might arise from such a deficiency even though iron was not lacking

SIR JOSEPH BARCROFT, FRS, opening the discussion, said that a definition of trace elements would have to include the following points first, they were usually metals but some (fluorine and iodine for example) were not, second, they were always found in the animal or plant concerned, third, they occurred in quantities of the order of one part in twenty thousand Finally he felt that the definition should include only elements of proved beneficial or toxic action, and exclude those whose occurrence appeared fortuitous —Replying to questions, Dr MANN said that there was evidence that, as in the vitamins of the B_2 complex, deficiency of one trace element might lead to signs of deficiency of another Thus deficiency of either copper or iron caused a decrease in hæmoglobin formation —Dr GREEN took up the question of defining trace elements raised by Sir Joseph Barcroft and others With our present knowledge, one could only say that they were elements which occurred in small quantities, they might have no known action or they might be beneficial or harmful

* * *

Prof THOMAS DALLING, MRCVS (New Haw), and Mr J R M INNES, DSc (Manchester), showed a film demonstrating the relation of *enzootic ataxia* or "swayback" of lambs in England to copper-feeding of ewes during pregnancy It showed the typical ataxia of new-born lambs, which might be severe enough to prevent them from keeping up with their mothers and so cause starvation The film also contained a demonstration of the lesions in the cerebrum and spinal cord

The paper on *cobalt and other trace elements in relation to disease in Australasia* by Sir Charles Martin, FRS, was read by Miss HARRIETTE CHICK, DSc (Lister Institute) These deficiency diseases occurred in Western and in South Australia In the West, the affected sheep or cattle showed a progressive emaciation, weakness and anæmia It was found that limonite, an ore containing iron, was effective in the treatment of the disease, but the curative agent was not iron, for an iron-free extract of limonite was as effective as the crude ore Experiment later showed that the active principle was cobalt and it is now possible to keep stock free from the disease by daily dose of 0 1 mg for sheep and about

THE LANCET

LONDON SATURDAY, NOVEMBER 7, 1942

INTRAMUSCULAR SULPHONAMIDES AND QUININE

TROUBLES with sulphonamides given intramuscularly have raised again the questions of technique which have been thrashed out many times for quinine. With the non-irritant injections, such as liver extract, no complications arise, though even there correct technique may save the patient pain at the time of injection and stiffness afterwards. Irritant injections are tolerated better by muscle than any other tissue, though THROWER[1] has demonstrated that local necrosis is common when the highly alkaline sodium sulphapyridine is given intramuscularly. Such sloughing, however, as a rule produces nothing worse than transient pain and disability. The serious troubles arise when the injected fluid reaches adjacent nerves. There was, for instance, the Trinidad case of ten years ago in which an injection of quinine into the buttock led to a sciatic palsy and a mighty legal battle ending before the Privy Council.

For the sulphonamides and antimalarial drugs the technique is much the same. The safest and least painful site is the upper and outer quadrant of the buttock, at the junction of the upper and middle thirds of a line joining the posterior superior iliac spine to the tuber ischii, well away from the sciatic and superior and inferior gluteal nerves. A sharp, fine-gauge serum needle is used—a hypodermic needle is not long enough—and needles should be periodically tested by applying a bending strain between hub and point. Needle and syringe must be clean and sterile; this is best achieved by boiling. If spirit or antiseptics are used they must be washed off before the needle is inserted. Injections should always be given in a good light. The patient will usually be in the semi-prone position with the upper knee drawn up. The injection site is painted with a coloured antiseptic. The syringe is then filled with the solution, a bubble of air being included which will be injected *after* the fluid. It is important not to leave an open track along which fluid may leak back, and the left hand therefore draws the superficial tissues downwards before the needle is inserted. The syringe and needle are held in the right hand as one holds a dart, the finger-tips gripping the hub of the needle and the nozzle end of the syringe. A fairly accurate estimate of the depth of the subcutaneous fat must be made, for the needle must reach well into the gluteal muscles. The needle is inserted with one quick stab but not beyond half an inch from the hub, the ulnar edge and little finger of the right hand acting as a stop. This half an inch is an essential precaution against the needle breaking, for any break usually occurs at the junction of the needle and its hub. Aspiration is then attempted to ensure that a vessel has not been entered, and thereafter the injection is given steadily and slowly followed by the air bubble to clear the needle. When the needle is withdrawn it should be inspected to ensure it has not broken. Consecutive intramuscular injections should be given on alternate sides. Some say that the buttock becomes less sensitive when injections are repeated, but it seems more likely that the patient acquires a higher threshold to discomfort. With sulphonamides and quinine, at any rate, this route should be used as little as possible. If an indolent ulcer does develop at the site of an unlucky injection the quickest way to heal it, once the acute illness is over, is to excise it under general anæsthesia and suture the wound without drainage.

There are usually urgent reasons for injecting solutions of the soluble sulphonamides. The patient may be unable to swallow, and in severe infections it may be necessary to supplement or precede oral by parenteral therapy in order to raise the blood concentration of the drug rapidly to an effective level. Intravenous medication has many advantages in these cases, principally because the peripheral circulatory collapse often present in the very ill causes local stagnation of any solution injected otherwise than into a vein. But if veins are collapsed or inaccessible there is no alternative to intramuscular therapy except hypodermoclysis, a procedure of questionable value. The sulphonamides given by injection fall into two main classes—those in which sulphanilamide is combined with a solubilising group to form neutral solutions, and the alkaline sodium salts of various derivatives of sulphanilamide. The first class includes the dye compounds, now largely superseded, and 'Soluseptasine'; the second group consists of the sodium salts of sulphapyridine, sulphathiazole, sulphadiazine, sulphacetamide and so on. Unlike the others of class 2, the sodium salt of sulphacetamide is neutral, but unfortunately its antimicrobic potency is low. The rest of the sodium salts are highly alkaline; sodium sulphapyridine for instance is as alkaline as N/10 caustic soda. The soluble derivatives of sulphanilamide are administered in solutions up to 10%, and up to 10 c cm can be given intramuscularly, but such a volume is painful merely for mechanical reasons however carefully the injection is given. The alkaline sodium salts are usually given intramuscularly in 33⅓% aqueous solution, and if danger is to be minimised not more than 3 c cm should be given in one injection; otherwise the pressure of fluid may lead it to track along the intramuscular planes to important structures.

Injection of quinine is called for most often in *Plasmodium falciparum* (subtertian, malignant tertian) infections. Coma in adults and convulsions in children are urgent indications. So are hyperpyrexia and the persistent vomiting which is common in the "bilious remittent" type of subtertian fever. Often in heavy infections although there is no vomiting the absorption of quinine appears to be slow and fever with headache persists; such cases respond well to a single injection of quinine. Intramuscular injection still is more popular than intravenous although for more than thirty years writers have urged the advantage of the intravenous route. Intravenous quinine has the theoretical advantage of bringing the drug into rapid and immediate contact with the parasite, but if given rapidly or in concentrated solution it may be followed by a fall of blood-pressure and by sudden death; locally it may cause thrombosis in a vein. Intramuscular injection has the disadvantage of being painful and of producing a local slough, which be involved in the absorption and excretion of elements For example, some people excreted manganese by the large intestine and others did not Plants too showed considerable differences in the amount of certain substances taken up from the soil He reiterated the importance of identifying the compounds in which the trace elements existed in the body, mentioned by Dr. Mann —Dr **MANN** said that by the use of radioactive isotopes it had been shown that iron and copper are converted into their organic compounds 4–5 hours after ingestion —Dr **MCCANCE** felt that the subject was fraught with difficulties and urged caution in the interpretation of the results of experiments with isotopes

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[1] Thrower, W R *Lancet* 1940, i 967

Summarising the day's proceedings, Professor **HARINGTON** said that it was always difficult to prove the need of a specific element until it had been shown to be a constituent of a compound with clearly defined functions He cited iodine, which for long was thought by a few workers to be implicated in thyroid disease but only when thyroxine was isolated and its composition and action determined was the rôle of iodine generally accepted. In the same way the essential nature of copper and zinc were only fully realised when it was discoverd in what compounds they existed in the body

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Reviews of Books

Subacute Bacterial Endocarditis

EMANUEL LIBMAN, MD, consulting physician, Mount Sinai Hospital, New York City, CHARLES K FRIEDBERG, adjunct physician to the hospital London Humphrey Milford, Oxford University Press Pp 108 15*s*

THE authors, with their wide experience, have written a concise and authoritative monograph on this important disease Ætiology, pathology, clinical features, diagnosis, prophylaxis, and therapy all receive adequate notice The most unorthodox and therefore most interesting part of the book deals with the mild and bacteria-free cases The authors believe that mild cases are common but often unrecognised The distinction between them and the bacteria-free cases is admittedly arbitrary Those which after recovery show no sign of the disease beyond the valvular lesion, present before infection, but suffer from sequelæ, are placed in the bacteria-free category The authors say that the bacteria-free stage may sometimes be suspected from the dark-brown colour of the face, and that sternal pain was present in all their cases—two clinical signs, which have received little attention from other writers They also draw attention to the little known fact that bicuspid aortic valves may be produced by the healing process They agree with most clinicians that though no satisfactory therapeutic agent has yet been discovered sulphapyridine is the best available but the percentage of cures is little higher than before the introduction of this drug They think that heparin used in conjunction with it is of little value and may even be dangerous, and do not consider the claim yet substantiated that better results are obtained with sulphapyridine and typhoparatyphoid vaccine than with the former alone Prophylaxis is stressed, especially the elimination of septic foci in those with well-compensated valvular disease or congenital heart lesions—a simple measure which might reduce the incidence of the disease appreciably

Allergy in Clinical Practice

By staff members of the Cleveland Clinic under the direction of RUSSELL L HADEN, MD, FACP, chief of medical division, edited by J WARWICK THOMAS, MD, FACP, chief of the section of allergy London J B Lippincott Co Pp 354 30*s*

IN this composite work the various manifestations of allergy are described in a clinical and practical manner The writers are specialists in various fields most of whom have not contributed much to published work on allergy before The idea is that each has studied allergy in his own field, and the book thus differs from those in which an allergist evaluates the rôle of allergy in some other specialist's field Allergic conditions discussed are bronchial asthma, hay-fever, perennial nasal allergy, allergic bronchitis, bronchiectasis, contact dermatitis, atopic dermatitis, drug eruptions, superficial fungous infections, urticaria and angioneurotic œdema, gastro intestinal manifestations, ocular manifestations, migraine and other allergic headaches, endocrine considerations and several uncommon manifestations In each chapter the symptoms and differential diagnosis are discussed lucidly, numerous illustrative cases are detailed in a concise and practical manner, the treatment outlined and the results summarised The importance, in all allergic cases, of combined management with inhalant, food and even bacterial antigens is stressed In hay fever skin testing with pollens alone is not considered sufficient; perennial inhalants and foods should be tried as well The fundamental rôle of allergy in the ætiology of mucous nasal polyps is maintained One or two chapters—for example, that on ocular manifestations—appear a little too enthusiastic even for an allergist.

Encephalography

E GRAEME ROBERTSON, MD Melb, FRACP, physician to outpatients, Royal Melbourne Hospital London Macmillan Pp 105 32*s* 6*d*

THIS short monograph presents the technique of encephalography and the interpretation of encephalograms concisely and clearly It is lavishly illustrated by clinical and pathological photographs, line diagrams, and reproductions of encephalograms, which fully justify its relatively high price The X-ray photographs are technically perfect and demonstrate lucidly every part of the ventricular system, basal cisterns, and sulci Dr Robertson follows the Swedish school of neuro-radiologists, and gives an illustrated précis of Lysholm's technique His work is simplified by use of the Schonander head table and the technique described can be translated to the general purpose units only with great difficulty Unfortunately the author only describes introduction of air by the lumbar route, although it is now widely held that more efficient ventricular filling is obtained by cisternal encephalography Abnormalities are well demonstrated after a description of the normal which includes an account of the asymmetry of normal lateral ventricles, particularly in the posterior horns

Cytology and Cell Physiology

Editor GEOFFREY BOURNE, DSc London Humphrey Milford, Oxford University Press Pp 296 20*s*

THIS is not a textbook of cytology but a collection of critical surveys of aspects of general cellular physiology and pathology in which fundamental advances are being made Each chapter is by an expert whose own researches have contributed substantially to progress in his subject Its production under war conditions is a remarkable achievement, and occasional minor defects deserve to be overlooked In the first chapter Dr J R Baker shows the importance of genuine histochemical methods and urges cytologists to think in terms of chemistry as well as of morphology His wide experience and enthusiastic interest in cytological technique should encourage a healthy scepticism in the interpretation of fixed and stained preparations Dr J F Danielli contributes two informative chapters on the investigation of cells by physical and physicochemical methods and on the cell surface and its properties in relation to cell physiology Dr J H Schulman summarises an immense amount of specialised knowledge on monolayer technique, but unfortunately has not introduced his subject in sufficiently elementary terms to make it easily intelligible to readers with slight knowledge of molecular properties Dr Bourne gives a clear and comprehensive account of mitochondria and the Golgi apparatus, and Dr M J D White summarises much fundamental information on nuclei, chromosomes and genes The results of micro-incineration studies are reviewed in detail by Dr E S. Horning Dr H Blaschko and Dr W Jacobson survey the scattered literature on the distribution of enzymes in cells and tissues This subject is in its infancy and the chapter should be easier to write in twenty years time, but it is critical and objective. In the final chapter, Dr R J Ludford discusses pathological aspects of cytology, it is a pity that the cytology of cancer, to which he has made such valuable contributions, should be dealt with in a short section and not in a separate chapter personalities were found to combine considerable resentment, frustration and anxiety with compensating efforts to bolster self-esteem by a show of independence and self-sufficiency - These emotions when excited consistently engendered the active changes described Finger temperature changes did not always closely follow changes in gastroduodenal function, nor was the relation between pain and increase in acidity and peristalsis always constant Psychologically it is often possible to demonstrate exact parallelism between periods of emotional stress and exacerbations of ulcer pain, and such stresses need not always be crises Ordinary strains may provoke intense effects because of the emotional make-up of the person, just as the difference between gastric reactions of ulcer patients and those of most normals suggests Emotional reactions and gastroduodenal changes should thus be viewed as two coincident aspects of behaviour in reaction to life situations—in some people relatively slight and harmless, in others so violent as to cause actual disease Insecurity, resentment, frustration and their opposites are closely linked with eating and the desire for food For the infant sucking at the breast offers the greatest sense of security, and even for the adult smoking or gum-chewing may sometimes give composure, reassurance and relief from tension Emotional states and the processes of eating and digestion are of course closely related, and this relationship has important bearings on the treatment of peptic ulcer as well as its ætiology The observations of Mittelmann and his colleagues are open to several criticisms, but we welcome the attempt to produce the laboratory link between psychological processes and gastric disease Their findings confirm the view that the personality of the subject is a fundamental factor in the causation of peptic ulcer

FAINTS AMONG DONORS

The blood donor who faints has an adverse effect on recruitment to an important form of national service And if the faint is delayed, as sometimes happens, until the donor has resumed work in a factory, it may lead to a serious accident Every effort should therefore be made to anticipate these undesirable reactions by finding out the most likely candidates and exploring preventive measures We are here dealing primarily with a physiological mechanism that is readily aggravated by psychological stimuli The physiological effects of acute blood loss were studied by Ebert, Stead and Gibson[1] in six professional donors who were in hospital for the duration of the study, 760–1220 c cm, representing 15 5–19 7% of the total blood-volume, amounts greatly in excess of the customary donation, were removed in the ordinary way and five of the donors showed sudden circulatory collapse Wallace and Sharpey-Schafer[2] obtained results of a similar order on 28 convalescent patients In both these experiments any gross emotional factors can be excluded with reasonable certainty A significant finding in the second group was a lowered blood-pressure after bleeding which, in eight of them, still persisted 24 hours later, in one case a fall of pressure with bradycardia and syncope occurred after the removal of 500 c cm, but half an hour later recovery was so far advanced as to permit the withdrawal of a further 600 c cm without significant change in the blood-pressure Poles and Boycott, who report their experience with the Army Blood Transfusion Service on another page, cite the instance of the two medical officers who fainted, one after the sixth and the other after the fifteenth donation Moreover when from 410 donors the amount of blood removed was 540 c cm the fainting rate was 8 5%, against 3 8% for a control group bled only to 440 c cm Fainting was not, as had been thought probable, confined to those normally showing an orthostatic fall of blood-pressure It seems clear, therefore, that fainting can be a purely physiological response to loss of blood

Most observers agree that collapse after blood-letting is common in the young, who are also more liable to emotional upset Greenbury[3] finds that young women, especially clerical workers, faint more readily than young men Others, including Poles and Boycott, have not found any tendency for females to faint more than males Williams[4] thinks that the tall thin asthenic type is liable to faint But in general, among the unemotional donors, it seems impossible to predict who will swoon Of the avoidable factors contributing towards fainting, fatigue seems certainly to be one, but its importance is not easy to assess It is a common experience that donors who hurry for their appointment are likely candidates for the sal volatile With regard to hunger, it seems agreed that donors who have eaten within three hours are less likely to faint than those who have not, but Poles and Boycott could not find convincing evidence that a lowered blood-sugar plays a part in the ætiology of fainting, and the prophylactic administration of glucose proved valueless Contrary to expectations they found the temperature and humidity of the room unimportant Neither did rate of withdrawal seem to matter Williams, however, urges the desirability of continuous supervision of the donor by the doctor, the fainting rate being reduced in this way from 8–11% to 3% He prefers not to bleed a donor during menstruation, and he describes the sudden onset of menstruation with an incapacitating exacerbation of dysmenorrhœa immediately after a donation, a phenomenon which he suggests may be ischæmic in origin The resemblance of the donor's faint to the vasovagal attacks described by Lewis has often been commented on, Brown and McCormack[5] considering the donors' attacks to differ only in respect of the horizontal posture and the loss of blood The possible rôle of the carotid sinus has been considered and it would be interesting to know if blood donors who faint have a hyperactive carotid sinus reflex Perhaps there is added justification here for the experienced nurse who insists on loosening the neckware of even the most robust and regular of donors However, carotid sinus hyperactivity is most commonly met with in the elderly, and in arteriosclerotics, only 2 of the 15 cases described by Weiss and Baker[6] being under thirty Ferris, Capps and Weiss[7] have noted fluctuations in the activity of this reflex and it has been analysed into if technique is faulty may become infected giving rise to an abscess, or may even be followed by tetanus In spite of the slow absorption by this route the small amount of quinine which is absorbed seems to be extremely potent in bringing about beneficial and often dramatic results Possibly the drug acquires additional therapeutic virtue by coming into contact with damaged tissues The intramuscular route is used of necessity in children when injections are required Abscess formation and pain can be prevented by careful technique Quinine dihydrochloride is the salt used for injection and it is preferable to use sterile ampoules of the solution when available There are reliable ampoules on the market containing gr 5 and 6 in 1 c cm and gr 7 and 10 in 2 c cm of water The solution may, however, be prepared fresh and sterilised by boiling Quinine dihydrochloride is soluble 1 in 0·6 of water It may also be made up as gr 7 in 3 c cm of normal saline The most important point in technique is to ensure that the syringe is sterile , with this precaution the incidence of abscess in one colonial hospital has been less than 1 in 5000 The solution, which is of a syrupy consistence, is injected very slowly to avoid pain, taking two or three minutes A hasty injection is usually followed by agonising cramp travelling down the leg Local massage after injection is painful and unnecessary The dose and frequency will depend on the particular case Relatively large doses are given to children because the drug is absorbed slowly and hence will have a prolonged action Five grains can be given to an infant In adults, in severe cases, 10 or 15 grains should be given at once Ten grains should be repeated six-hourly in cases of coma for 3 or 4 doses The site of injection should be varied each time In milder cases a single injection of 7 or 10 grains will often stop vomiting, relieve headache or reduce the temperature when full doses are given by mouth as well Mepacrine injections are best given intramuscularly, the dose being 0 05–0 1 g They do not cause sloughing and absorption is rapid Toxic symptoms including mepacrine " psychosis " are frequent after large doses intravenously, and delayed collapse and sudden death after 12 hours have been recorded The drug compares favourably with quinine in its effect on the fever and parasites, though extravagant claims were made in its early trials Both mepacrine and quinine have been subject to abuse by giving injections indiscriminately—often with the sole object of gain and even in cases when the diagnosis of malaria was not established This should not be allowed to obscure the fact that both drugs are safe and efficacious when given intramuscularly within the correct indications and with good technique.

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[1] Ebert, R A Stead E A and Gibson, J G *Arch intern Med* 1941 68, 578

[2] Wallace J and Sharpey-Schafer, E P *Lancet*, 1941, ii, 393

[3] Greenbury, C L *Brit med J* 1942 i, 253

[4] Williams G E O *Ibid*, p 783

[5] Brown H. and McCormack P *Ibid*, p 1

[6] Weiss, S and Baker, J P *Medicine*, 1933, 12, 297

[7] Ferris, E B, Capps R B and Weiss, S *Ibid*, 1935, 14, 377

EMOTIONS AND GASTRODUODENAL FUNCTION

THE association of peptic ulceration with the nervous system has long been recognised, but there have been few experimental observations on the relationship of the emotions to gastroduodenal function, partly because of difficulties in assessing emotional states and excluding personal bias in the observer The experimental approach, too, has been baulked by the persistent idea that " functional " and " organic " conditions are separate, rarely meeting and never mixing An increasing volume of work on the psychosomatic aspects of medicine is showing how false such a separation must be ' The question is no longer Has this patient an organic lesion or a neurosis ? but Which of the two is the primary condition since both are present ? British medicine has attached importance to the underlying nervous constitution and the significance of anxiety and strain in the ætiology of peptic ulcer, but most studies on this subject have correlated personality types and occupational stresses with the incidence of such ulceration

MITTELMANN and others [1] in America have now set out to relate emotional states to actual changes in gastric motility and secretion Normal subjects and patients with peptic ulcer were examined under controlled conditions in which some 160 observations were made The subject swallowed a double rubber tube, to one orifice of which a thin rubber balloon was attached , this was inflated in the stomach and the tube leading from it was connected to a kymograph by way of a water manometer, and gastric contractions were thus recorded The second tube was open and gastric juice was withdrawn through it by continuous suction Movements of the chest wall and variations in finger temperatures were also recorded The same subjects were repeatedly examined and, after control periods during which as much mental and physical relaxation as possible was achieved, several experimental periods were studied during which the emotions were excited in different ways The mental stimuli applied, judging from previous study of his character and personality, were such as to challenge or undermine the subject's sense of emotional security and to reinforce old stresses The type and intensity of emotions induced by carefully chosen situations or questions naturally varied from subject to subject, and their physiological changes in gastric secretion and motility naturally differed too, even during periods of apparently complete relaxation , but allowing for this the subjects showed remarkably consistent reactions to the emotions engendered Tension, anxiety, resentment and anger were almost always accompanied by increase in secretion of hydrochloric acid and pepsin , peristaltic activity became continuous and the contractions increased in size , the respiration-rate became more rapid and breathing shallower and there was usually a drop in finger temperature These reactions were seen in subjects with and without ulcer , but in the ulcer patients pain often developed as well, and the changes on the whole were ampler When feelings of security and assurance were induced, however, gastric function reverted to normal The observers suggest that besides these variations in secretion and motility under emotion, changes may be found in gastroduodenal vascularity , thus in conditions of induced anger and resentment they saw the blood-vessels of a gastrostomy patient dilate This implies a direct relationship between such changes and mucosal erosions or actual ulceration

When the responses of the normal subjects investigated were closely analysed, some contradictions were noted In some people emotional stimuli may cause gastric inhibition rather than stimulation, and in these fear rather than resentment seems to be the dominant feeling Among the peptic ulcer patients no case of such inhibited action was noted , and their

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[1] Mittelmann, B Wolf, H G and Scharf, M *Psychosom Med* January, 1942, p 5

WHY DOCTORS DIE

THE medical profession has its hazards, as Dr A Hope Gosse, in his presidential address [1] to the Medical Society of London on Oct 26, was able to show from records of 8884 doctors and dentists in 1938 They ranged in age from 25 to 65, and all had been examined and found physically fit when they first came under observation He divided them according to age, there were 2411 aged 25–35, 3604 aged 35–45, 1799 aged 45–55, and 1070 aged 55–65 In 1938 there were 8 deaths (0 33%) in the first of these age groups, 9 (0 24%) in the second, 8 (0 44%) in the third and 16 (1 5%) in the fourth The figure 8 seemed high for the first age group, and an analysis for the corresponding age group in 1939, made on about the same number of doctors, gave only 3 (0 12%) deaths, which he thought to be a fairer figure With this correction there is, as might be expected, an increase in the death-rate with each decade in the proportions 1 2·4 13 He estimates that 3 out of 4 doctors survive to 65, however, which gives most of the profession a chance to shine later as grand old men Seeking the causes of death in those carried off earlier he examined 100 consecutive deaths among his 8884 doctors between 1938 and May, 1940 Cardiac and cardiovascular diseases accounted for no less than 33, in 17 of these the condition was cardiovascular degeneration, and in a further 10 coronary thrombosis But he does not believe that coronary thrombosis has any claim to the title of "the doctor's disease" which some have given it Where, he asked, is the evidence that any other profession or trade has a lower rate than 27 deaths from cardiovascular degenerative diseases out of 100 deaths before the age of 65? Malignancy accounted for 15 deaths out of his 100 and pneumonia for 12 Hemiplegia—which might perhaps fairly be added to the degenerative cardiovascular conditions, bringing the total up to 36%—was responsible for 9 deaths No less than 7 committed suicide, 5 were killed in accidents and 4 died of pulmonary tuberculosis Infections, which might be supposed to come the doctor's way fairly often, only killed 11, and the remaining 4 died of prostatic disease, a blood disease, a perforated duodenal ulcer and enemy action

During 1938, 1620 of the 8884 doctors in the series were ill for over a week, influenza and other respiratory infections were the cause in 648 (40%) of them, including 21 cases of pneumonia Other acute infections affected 76, so that infections if relatively poor at killing doctors are good at wasting their time, 100 (6%) were laid up with accidents, 11 with insanity and 60 with anxiety states, 78 with fibrositis or other rheumatic disorders, 54 with appendicitis, 51 with infections of the hand, 18 had pulmonary tuberculosis Only 57 went to bed with heart or cardiovascular trouble, which possibly signifies that if doctors with cardiovascular degeneration would lie up a little earlier, it would not loom so large as a cause of death in the profession On the whole Dr Hope Gosse finds that every doctor must expect an average of 8 6 days of illness a year between the ages of 25 to 65 In 100 consecutive doctors who had reached the age of 65 he found only 7 who had not had seven days of consecutive illness during their working lives, he did not mention whether they felt proud or aggrieved

REMEDIAL EXERCISE TECHNIQUE

THE physical process of getting an injured man's muscles back into trim is only one part of reconditioning but it is an essential part, and one of the most valuable lessons of the British Orthopædic Association Nottingham meeting was Mr E A Nicoll's demonstration at Berry Hill Hall of the principles embodied in remedial exercises and occupational and recreational therapy The work in a rehabilitation centre must be varied in character, or the patient soon gets bored There should be general exercises to build him up and make him fit, but this must be constantly alternated with specific exercises for the actually disabled part We now know that the dosage of remedial exercises is very important, and there is as much danger in a "poisonous dose" for fatigued muscle as if the exercise were some potent drug It is therefore important to try and assess what is the optimal dose of exercise for each man, after which he must relax This hiatus is filled by occupational therapy, which is purely diversional and intended just to keep the patient interested, although many people think that because they have an occupational therapy department they are doing all that is needed for rehabilitation General exercises, such as running, are not enough, and at certain times full and undivided attention must be given to exercising only the disabled part There are three principles to be observed in any such specific remedial exercises (*a*) the exercise must be really specific, and the patient has to be watched or he is apt to develop a trick movement, (*b*) there must be rest intervals between exercises, and (*c*) the exercises must progress—that is, they must be kept just a little ahead of the patient, as Nicoll put it, like the donkey and the carrot held in front of him—but the patient here eventually gets the carrot Progression of movement in three ways is required, in range, power and time Men who have to work, say, in the mines work under conditions of great physical stress, and have not only to have powerful muscles but must be able to keep working over long periods, and such a patient must be capable of long sustained powerful exercises before he returns to duty Each of the exercises is so arranged as to progress gradually To take one exercise as an example, in an extension exercise of the back the patient first lies on his face with hands at the sides and feet held, and he lifts his head He now puts his hands behind his ears and raises his back He next extends the arms in front of him and raises himself, thus lifting the additional weight of his arms He then progresses in range of movement by lying over a small chair, and then extending his back For flexion, lateral flexion, rotation—for each movement—such progression exercises have been planned Nicoll points out that a muscle only increases in power if made to contract against slightly increased resistance, and the next principle therefore is to isolate the muscle and make that contract, this he does by the use of pulleys and weights To exercise say the adductors of the thighs, the whole limb is first suspended to an overhead frame To the inner side of the thigh a cord is attached which leads to weights over pulleys, and the patient can then adduct increasing weights for longer and longer periods A graph of this can be drawn, and the patient sees for himself his regular progress Nicoll has come to know the amount of weight, and how long it must be maintained, before a miner can return to work—for a knee injury the miner must be able to pull up and hold 22 lb ten times without being unduly fatigued All these exercises must be slowly performed The X-ray plate is no reliable guide to subsequent efficiency Some of the miners with well-marked spinal deformity after crush injuries had remarkable flexibility and movement in their spines The flexibility of any miner's spine is always striking, Nicoll explained it as due to the specially long hamstrings they possess from working in the mines from the age of 14 They can thus touch their toes with the palm of their hand, often even when also slightly flexing the elbows Nicoll's planned scheme of exercises built on sound principles so as to progress step by step represents a great advance Up to now, the average medical man has had too little knowledge of the principles he should employ in guiding his massage department or physical instructors [1]

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[1] The address will appear at length in the *British Medical Journal*

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[1] Three useful books on this subject are published by H M Stationery Office (1) Physical and Recreational Training 1941 1*s* (2) Recreation and Physical Fitness for Youths and Men Board of Education Physical Training Series No 15 1937 2*s* 6*d* (3) Reference Book of Gymnastic Training for Boys Board of Education Reprinted 1938 3*s* 6*d*

three components a vagal stimulation, a depressor action, and an effect on the cerebral vessels causing local anæmia of the brain BROWN and MCCORMACK suggest that the carotid sinus may be only one of several receptor organs and that the syncopal attacks of donors may be induced by the same efferent pathways It is perhaps significant that the three components of the carotid sinus reflex have been recognised either severally or together in the syncope of donors Some of these syncopal attacks are associated with convulsions and occasionally with loss of sphincter control When the attack is followed, as it sometimes is, by a deep sleep, the resemblance to an epileptic fit is complete Can it be assumed that these donors are potential epileptics and that the loss of blood has induced a first attack ? An embarrassing and fortunately rare sequela of a faint is acute hysteria, which calls for firm handling ; these people should be allowed to faint only into the arms of one of their own sex Another interesting complication of blood letting is hyperventilation tetany, seven instances of which have been recorded by FRAZER and FOWWEATHER[8] This state, which has sometimes developed after the removal of only a small amount of blood, is associated with a low inorganic phosphorus content of the blood and a high normal or raised calcium They attribute these attacks to fear, but mention that the small amount of adrenaline in the local anæsthetic may play its part

War-time experience in mass bleeding has taught us that it is possible to make the nervous donor feel at home The apprehensive subject who has volunteered for self disciplinary or purely altruistic reasons, or who has been pressed into service by an over-zealous propagandist, should never be left unattended and mentally unoccupied With encouragement he will make a good donor Volunteers awaiting their turn should sit in a separate room, where their hæmoglobin can be estimated, a procedure which apart from giving both doctor and patient added confidence invariably creates interest and diversion A not too obtrusive background of music both here and in the bleeding room serves to dispel fear and monastic gloom, while the minimum of theatre ritual consistent with asepsis helps in the same direction The bleeding room should be airy and light and beds are more comfortable than couches It seems best not to screen off each donor for there is comfort in the knowledge that others are going through the same ordeal , the bogy of epidemic fainting can be obviated by having the beds in series A nurse should engage the attention of the donor until the doctor arrives POLES and BOYCOTT have tried giving donors from hot workshops a litre of normal saline before bleeding , in a group of men over 40 the fainting rate was thus reduced from 2 9% to 0 8% If such donors have to be bled straight from work this measure seems desirable, but for choice donors should be bled in their off-duty time The pressure in the sphygmomanometer cufflet, which causes less discomfort than a tourniquet, need never exceed 80 mm Hg, and once the flow has been established can be reduced to 40 mm or less , many will fill their bottles with no pressure at all The amount removed should never exceed 420 c cm and should often be less The donor should remain on the bed for 15 minutes at least and not be taken through another room unless he can be carried on a stretcher After refreshment he should rest in a chair and not be allowed to leave the building until at least half an hour has elapsed since completion of the bleeding Such measures will not abolish faints but should reduce their incidence to under 2%

Annotations

CAMP-FOLLOWERS OF WAR

IN his broadcast on Oct 23, Sir Wilson Jameson coupled tuberculosis and venereal diseases as infections which normally become more prevalent during wars, and he asked for a frank and realistic attitude to them on the part of the public Developing this theme at a recent press conference he pointed out that, while our national health during this war has been better than could have been expected, these two groups of infection have shown the anticipated increase It is noteworthy, however, that the rise in the death-rate from tuberculosis has shown a remission during the first half of this year, deaths from all forms of the disease having numbered 14,412 as compared with more than 16,000 deaths in the first half of 1941 Nevertheless the figure still maintains a substantial lead over 14,131 deaths, the figure for the first half of 1939, and a further rise, as Sir Wilson was careful to point out, must be expected In the case of venereal diseases the rise in incidence has been steady, though not as rapid as it was in the last war Before this war the numbers of new cases of syphilis attending clinics had fallen from 9000 in 1931 to just below 5000 in 1939 In 1941 the figure rose to 7332—a 50% increase among civilians , if Service cases are added the increase is about 70% Since venereal diseases are not notifiable in Britain this is just a rough estimate, but a fairly close one he believes Figures for gonorrhœa among the civil population are more difficult to assess, because many cases are treated privately, but working on figures provided by the Forces it can be assumed that there are 8 new cases of gonorrhœa to each new case of syphilis This would mean some 60,000 new cases of gonorrhœa last year among civilians The problem is neither overwhelmingly large nor beyond the scope of existing provisions for treatment There are, he reminds us, 200 treatment centres in England and Wales, mostly at hospitals, and in country districts general practitioners specially trained in diagnosis and treatment are under taking the care of cases in their surgeries , so that therapy is available for anyone who needs it—and in early cases of either syphilis or gonorrhœa, the recovery-rate under treatment is nearly 100% He believes that if these diseases were discussed more generally and frankly, as infections which can be cured, people would more willingly attend for early treatment The Scandinavian countries have reduced the incidence greatly by airing the subject of venereal diseases thoroughly, and encouraging realism in the public attitude to it In Sweden in 1935 the incidence was only 0 6 per 10,000, at a time when it was 1 2 per 10,000 here He thought there was little to be gained at this stage by emphasising the more dreadful side of these diseases or exaggerating the danger to wives and unborn children , but he is anxious to see the whole topic removed from its association with notices in public conveniences and discussed in the context of an infection which is spreading and can be checked

The Ministry is also appealing to practitioners to make sure that in treating gonorrhœa they use adequate dosage at the start The quicker the patient is cured the less chance he has of spreading disease, of defaulting before he is fit, or of developing a blood dyscrasia , and the less the danger that the gonococci will become drug resistant

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[8] Frazer W F and Fowweather, F S *Brit med J* 1942, i, 759

SONNE DYSENTERY AT A GRAMMAR SCHOOL

JOHN R GRAHAM, M B ST AND, D P H
MEDICAL OFFICER OF HEALTH FOR CHESTERFIELD RDC

THIS summer there was an outbreak of Sonne dysentery in a mixed day school of 301 pupils who come from a ten mile radius Practically all the children have lunches prepared and served from the school kitchen. The headmaster's wife supervised the kitchen staff, which consisted of a cook and four kitchen-maids One of the maids had only returned to duty after scarlet fever the day after the outbreak started The first report of the outbreak was from a local practitioner on the evening of Wednesday, July 8 This doctor, whose son was one of the patients, learned from the headmaster that a number of children were absent on the morning of that day and a further number had been sent home during morning school with sickness and diarrhœa One girl had been absent sick on the previous Monday with a diagnosis of dysentery not subsequently confirmed One boy sent home on the Tuesday with sickness and diarrhœa returned to school on Thursday This boy was perfectly normal when interviewed on Thursday. It was not possible to obtain a specimen of fæces and the history, while suggestive of a mild Sonne infection, was far from conclusive On Wednesday morning 15 pupils were absent and during the day a further 23 were sent home suffering from sickness and acute diarrhœa One of the kitchen-maids also complained of feeling ill on Wednesday morning but felt better in the afternoon This maid was absent on Thursday morning, and was found to be suffering from a typical attack of dysentery A positive stool was later obtained from this case The two local practitioners reported no outbreak of sickness and diarrhœa in the town, the only cases at this stage being from the school

On the Thursday morning (July 9) 14 more pupils were absent, all presumably suffering from the same complaint This gave a total of 52 cases in two days out of a total of 301 pupils It is certain that some of the pupils still attending had modified attacks but would not admit to it, as the school-certificate examinations were being held, and to miss this examination meant another year at school

Specimens of fæces from 5 of the worst cases were obtained on July and taken *direct* to the Derby County Council Laboratory It is important that specimens of stools should be sent with the least possible delay, if there is a long period between collection and plating out the Sonne bacillus tends to lose virility and be ousted by the hardier and quick-growing coliform organisms All 5 cases were reported to be positive for Sonne dysentery on Friday, July 10 Before this report was received it was obvious that some article of food partaken by the children must have been heavily infected, and the one meal taken by all the children was lunch The following are the menus

Friday, July 3 Stewed steak, new carrots, new potatoes

Monday, July 6 Roast beef, spring cabbage, new potatoes, gravy, treacle sponge and custard

Tuesday, July 7 Cottage pie, date pudding and custard

Of the 15 pupils absent on Wednesday the earliest symptoms appeared at 11 PM on Tuesday, giving a possible incubation period of 10–36 hours if Tuesday's lunch were at fault and 34–60 hours if Monday's lunch was the culprit

Investigation —All materials from lunches on July 3 and 6 had been used up Samples of cottage pie and date pudding of the lunch on July 7, as well as specimens of milk, water, custard powder and flour were examined, all with negative results The farm supplying the milk to the school was visited and no history of any intestinal disturbance was admitted by any of the workers It was highly improbable that this milk was infected as the farm had a large retail milk round and no outbreak occurred among their customers Specimens of fæces from the kitchen staff, and blood specimens were obtained and yielded negative results No history of any illness before Wednesday, July 8, was admitted by any of the kitchen staff It is to be noted that negative agglutination reactions in the dysenteries are not always reliable[1] Hobbs and Allison report in the July *Bulletin of the Emergency Public Health Laboratory Service* of two carriers who failed to agglutinate Sonne's bacillus at 1/10 or over

Preventive measures —The school lunches were stopped after Thursday, July 9 The school caretaker was instructed to wash with disinfectant all lavatory seats, cistern handles, taps, &c, and to have all towels boiled

Secondary cases —Fifteen further pupils were absent on Friday, July 10, and 8 more on Monday, July 13 It was not possible to visit all these cases but some at least were not suffering from dysentery but stayed away from fear of contracting the disease Four secondary cases were known to occur in households of infected pupils

Mode of infection —It is highly improbable that any of the well-cooked dishes were the infecting agents It was found that the custard served with the pudding was prepared with milk and custard powder This custard was made about 1–2 hours before being served and in the interim was kept warm on a rack or in an oven This is the most probable food to be infected. It is likely that one of the kitchen staff had an extremely mild infection or had fortuitously contaminated her hands and in handling the custard had inoculated it

Type of attack —The attacks varied greatly in severity, but most of the patients had fairly severe and acute attacks The following history may be taken as typical

Boy, aged 12 yr Woke with pain in stomach at 6 AM on Wednesday, July 8 Vomited and had four very loose motions before going to school Vomited again in school and was sent home, where he arrived at 11 AM Had violent headache and was sick again Started at 2 PM with diarrhœa, had a violent motion every half hour till 4 PM Some blood and mucus in stools Then became drowsy and "wandered in his mind" Was very "fevered" At 10 PM diarrhœa started again and continued till 4 AM with motions nearly every half hour He then slept and next morning had one or two loose stools but was much improved When seen on Friday, July 10, temperature and pulse were normal The patient felt and looked tired and complained of "heaviness in his head"

Headache in this period was a common complaint with most cases Temperatures of 102°–104° F were common in the more severe cases, and the urgency was so great that in some cases it looked as if there was loss of sphincter control There were no fatal cases and all made uncomplicated recoveries

CONCLUSIONS

The epidemic was of a typical dysentery with sudden onset This is in contrast to the outbreak at Ely Homes for Children, Cardiff, reported by Hobbs and Allison The outbreak was certainly caused by some article of food served for lunch at the school, but, as in so many of those outbreaks, it was impossible to prove conclusively which dish was responsible and how it came to be infected

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ROYAL MEDICAL BENEVOLENT FUND —The management committee met on Oct 27 to receive a very encouraging report There has been a slight decrease in subscription income during the past nine months and an increase of approximately £1000 in the amount paid in grants, but the treasurer was cheerful about the situation A number of welcome legacies were announced, but attention was again called to the difficulties caused by benefactors not being clear as to the name of the body to receive their gift Such inaccurate descriptions as "British Medical Benevolent Fund" give rise to confusion Sir Thomas Barlow, in celebration of the 25th year of his presidency, has sent a personal letter to the staffs of hospitals asking for their cooperation, and the result has been encouraging His Christmas Gift appeal, now an established success, should enable the fund to give at least the usual £2 to each of its beneficiaries—a godsend to many of the deserving people who depend on the fund The case committee reported that in view of the increased cost of living it had taken advantage of the encouragement to be more generous in its grants so far as could be done with prudence

APPOINTMENTS FOR OUTPATIENTS —An appointments system for outpatients will be instituted at St George's Hospital on Nov 2 Private and panel doctors are asked to coöperate by telephoning to arrange appointments with the appointments clerk at the hospital (Sloane 7151)

RCS CALLING

SURGERY comes into its own during war when breakages cannot be replaced from stock and invisible mending becomes nine parts of the craft Orthopædic surgeons especially have been thinking of that restitutio ad integrum, rather feebly called rehabilitation, which should have been, and too often has not been, the aim of the healer The Royal College of Surgeons of England has never failed in its collegiate devotion, witness the attendance at council meetings which has not been diminished by the present fatigues and hazards of travelling, and the gulf between fellows and members is bridged by a pleasant communal meal in the autumn. There are other signs too of a more catholic outlook The college has joined the other two royal colleges in a standing committee which meets at least once a quarter to consider big common issues This committee has defined consultant status and has suggested that those who claim it should have had proper training and experience One change is so fundamental that it is legitimate to fancy it blew in (and up) with the bomb on the Hunterian museum Surely John Hunter, who was always asking how and why things happen, would have rejoiced to learn that pathology is now to be included in the first test exam for the surgeon Deans of medical schools had agreed that the Primary Fellowship as it stood was non-educative in character and wrongly delayed the entry of the undergraduate into the wards The examination is therefore to be made postgraduate, which will please the overseas candidates, and Home Office permission is being sought to make the necessary alteration in the by-laws This worldwide distribution of the fellowship is in itself significant, candidates from overseas made up 43% of the entries to the Final Fellowship in the last prewar year Besides the brave scheme for the restoration of the museum some small but useful facilities have been granted Medical students are now free of the library to which many new textbooks have been added for their needs Textbooks and periodicals have been supplied to the Prisoners of War library, and 22 medical journals are circulated among the officers of Royal Naval hospitals A research chair in ophthalmology is being set up at the Royal Eye Hospital The report which tells these and many other things can be had on application to the secretary of the college at Lincoln's Inn Fields Fortified by reading it any fellow or member can propose (before Nov 9) a motion to be brought forward at the annual meeting of fellows and members to be held at 2 30 PM on Nov 19 But for the last five years attendance at this meeting has not reached the quorum of 30

POLIOMYELITIS AFTER TONSILLECTOMY

CASES in which poliomyelitis has followed tonsillectomy within 7–14 days have been recorded from time to time since 1910 A total of 2857 such cases has now been collected by Aycock[1] and his analysis shows that the bulbar form of paralysis has followed this operation in a significant proportion of cases The evidence points to the contamination of the wound by virus existing locally at the time of the operation rather than by subsequent infection A remarkable example of this association is reported by Francis and his colleagues[2] In a family from Akron, Ohio, 5 of the 6 children underwent tonsillectomy on the same day Between 9 and 14 days later all 5 developed a severe bulbar poliomyelitis from which only 2 survived Investigation of possible sources of infection disclosed the virus in the intestinal tracts of certain child contacts of the family as well as in the 6th child who had been fortunate enough to escape tonsillectomy Virus was not obtained from the parents' stools It seemed probable that the children of this family acquired the virus in the first place from a cousin with whom 2 of the children had stayed for several weeks, a month before tonsillectomy was performed This cousin, a child of 5, had undergone tonsillectomy 2 days before the visitors left for home, and had an attack of "general weakness" 3 weeks later which, in retrospect, may well have been a mild attack of poliomyelitis He and his younger sister both harboured the virus in their intestinal tracts The disease was *not prevalent locally* at that time and the conclusion seems inescapable that tonsillectomy precipitated the simultaneous attacks in the 5 children, especially as the palsies were all of the bulbar type and the axonal pathway is now generally accepted as the usual mode by which virus reaches the central nervous system We have yet to learn how the virus is conveyed from one carrier to another, from the investigations of these workers it seems clear that "something more than contact must be invoked to explain the distribution of virus"

CONTROL OF TUBERCULOSIS

THE sections of medicine and epidemiology RSM last week agreed that pulmonary tuberculosis as an infectious disease could only be brought under control by a threefold approach, clinical, sociological and epidemiological. Dr R C Wingfield, opening, was for a long-term policy which 50% of his audience would not live to see completed The sputum-positive members of the community, computed in Britain at 250,000 with many of them subjectively well, were the spear head of an infectious army which had to be annihilated Later speakers *suggested how this might be done* Wing-Commander R R Trail said it was essential that a patient on leaving sanatorium should be well enough off to carry out the instructions given him Dr Cyril Banks wanted the tuberculosis officer to be epidemiologically as well as clinically minded

In recent months it has become clear that action will be based on three principles (1) mass radiology for the detection of early cases, (2) accommodation for those requiring treatment with financial provision for both patient and dependants, (3) an acceptable rehabilitation scheme whereby, through part-time work and subsidised wages, a patient can be nursed back to normal employment and relapse avoided The encouraging statement of the Minister of Health has left open two questions first, what is the size of the financial grant that he is going to make to a patient, and what is his definition of treatment? If by treatment is meant institutional treatment only, then the grant will presumably cease the moment a patient leaves his sanatorium and the inducement to attempt unsuitable work will remain On the other hand, if the recommendation of the MRC committee on Tuberculosis in Wartime that rehabilitation should be regarded as an *essential part of treatment* is accepted, then a big step will have been taken towards remoulding the patient's environment along the right lines rather than forcing the patient to fit the external conditions The importance of the environmental factors, of which infection can be regarded as one, in any scheme for the eradication of tuberculosis was again emphasised by Dr J B McDougall Moreover it is important that these three measures—mass radiography, *financial provision* during treatment and rehabilitation—should march in step There is a danger at present that the first may outstrip the other two, that fresh early cases will be detected before the machinery to deal with them is ready This would mean the loss of public confidence on which ultimate success rests Surgeon Captain W D W Brooks insisted that control should be international in outlook ' *It would be futile, if not dangerous,* to breed a Mantoux negative race of non-immunes, with the risk of influx of infection from a neighbouring state the archbishop is a candidate for the post of prophet he will have to contend with the same difficulties, but, please God, humanity will cast aside its childishness and scan the message and not the man

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[1] Aycock, W. L *Medicine* 1942, 21, 65

[2] Francis, T, Krill, C E, Toomey, J A and Mack, W N *J Amer med Ass* 1942, 119, 1392

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The season of sleepy wasps was upon us I had been reading both in the medical and the lay press of the dangers of being stung on the head or neck by such an one, of, for example, a labourer who had felt a prick on his forehead, had brushed away an offending insect to fall down, some ten minutes later, dead Had I not seen a yellow cocker spaniel bitch roll over in a syncope as the result of a wasp-sting? True my only encounter in 60 years with a wasp was *more humorous than painful* She resented my intrusion into her winter quarters—a pair of beautiful blue trousers which she, woman-like, had chosen with an eye to colour schemes But that sting was on a foot and not on my head or neck.

And then it happened I felt a prick quite close to my left jugular My colleagues, regardless of entomology, shouted "kill him" as the insect fell on the table-cloth Doubtless I went white, and rushed off to the laboratory for the one per cent. acetic acid I knew I should find there, having read that it was an antidote to the pain of wasp-stings It worked Nor was there any alteration of my pulse and I came back to the refectory really in doubt if I had been stung at all Next day there was no doubt I had grown in the night a fine goitre which woggled as I walked I shall not be so scared of wasp-stings in future, but my two-days' Derbyshire neck has made me very sympathetic towards the goitrous

* * *

There were about forty of us waiting in the Post Office but the formidable juvenile—she looked about thirteen—who was serving me suddenly recollected a grievance With pen arrested at the first syllable of my name she turned violently on her colleague on the right. "What did you do with that *good* pen I lent you on Saturday?" she demanded Her colleague was suave and soignee, she patted her perm "What pen was that, dear?" she asked smoothly, playing for time "That *good* pen," replied the juvenile bitterly, adding, to clear things up, "I lent it you on Saturday" "Oh that one," said the colleague, "I gave it you back" "Oh no, you didn't" "Yes, I did, dear You're using it now" A polite *fiction*· operations were still suspended on the top line "Not *this* one," said the juvenile with blistering disgust. "That *good* one The one I lent you on Saturday" "Oh *that* one," responded the colleague lightly "*That* was no good That's been put out for the public"

* * *

Schizophrenics are strange people I was turning over some old case-notes the other day and came on the story told me by a little cockney schizophrenic He and his family had built up a big business in, I think, canned food packing and distribution, and when the war came, they were doing very well indeed canning vegetables for the BEF I first saw him about Munich time, when they'd got their first big contract He was very very hallucinated, and so I never knew whether this particular story had a basis in fact or not Anyhow, he told me he had a car which he just couldn't sell He could afford a new one comfortably, but his business hadn't been built up by keeping old stock So he fixed up a little plan with a friend He went to work as usual, and parked his car in a side-street A quarter of an hour later, the friend arrived with a duplicate starting key The friend drove the car down to Dover, picked an isolated spot, set the car going, jumped out, and over the cliffs it went At one o'clock, the schizophrenic went round to the side-street to collect the car, found it had gone, rang up the police, and in due course collected the insurance money Just to make sure he got it, he used a broker who badly wanted to take on his firm's business The success of such an enterprise depends, as far as I can see, on one thing the existence of a really isolated spot on the Dover cliffs That's the part which makes me doubtful But the story as a whole isn't like a schizophrenic delusion It's too neat and clear-cut I don't know the answer, and I don't suppose I ever shall

Letters to the Editor

INGUINAL HERNIA

SIR,—After reading Squadron-Leader Arthur's article I would like to submit some points which have proved of value in my experience

1 It is unnecessary to fix the neck of the sac to the abdominal wall The complete removal of the sac allows the retraction of the neck well away from the internal abdominal ring To fix it to the abdominal wall, even some distance from the internal ring, fixes the parietal peritoneum where ordinarily it is singularly mobile from the parietes and I don't think we can improve on nature's arrangement in this respect

2 It is necessary to recognise, define and to suture transversalis fascia Several surgeons have mentioned this before It is not a stout structure in the inguinal region, but it is clearly there and does present an appreciable barrier when it is closed and the defect in it is likewise appreciable I believe, with others, that careful suturing of the fascia is as important, if not more so, than that of the muscle bellies in the reconstruction of a hernia It requires the finest silk or thread

3 Bassini's practice of excising cremaster muscle (a much larger structure than at first sight appears) with a view to reducing the size of the spermatic cord and therefore of the internal and external ring is valuable, but it adds 5 minutes to the operation

4 Careful mobilisation of deep Poupart externally and deeply also assists in the snug apposition of the above parts without tension

5 Bassini's procedure of inserting a key de tensioning suture of stout material through the lateral margin of rectus muscle and through the periosteum of the pubic spine is admirable Once this is tied, then conjoint tendon becomes relaxed and fits to deep Poupart easily This stout suture in addition brings the strongest portion of the posterior wall of *the inguinal canal behind the weakest portion of the anterior* inguinal canal (the external ring) and therefore it is sound surgically To affix conjoint tendon to deep Poupart, the finest thread or silk is adequate, being non irritant they do not provoke the inflammatory or sterile suppurative reaction characteristic of stout catgut, and besides they are unabsorbable The line of their insertion into deep Poupart's ligament is varied so that the strain is not on the same band of fibres, thus discouraging any tendency for them to split I think it was Admiral Wakeley who pointed out the advantage of this

6 With regard to the fascial graft, Wilkie used to suture the lateral edges together so that the graft was converted from a suture into a sheet and when this is possible it is worth doing Again, fine silk or thread in ophthalmic needles is used

7 External oblique can often, with advantage, be overlapped *It is often attenuated* and this strengthens the *anterior* wall

8 Bassini's method of regulating the size of the external ring by closing it with a series of interrupted sutures until it will just admit the tip of the little finger is a precise one It requires that the upper and lower pillars of the ring to the pubic spine be carefully cleansed beforehand, so that aponeurosis and not gubbins is sutured

Last, the repair of herniæ done with this attention to detail is somewhat time-consuming, taking from 30 to 40 minutes rather than the conventional 15 to 20, but it is well worth while because recurrences are hardly ever seen, even when this type of operation is performed on herniæ which have recurred three and four times previously

Harley Street, W HAROLD DODD

PROGNOSIS AFTER PERFORATION

SIR,—In your annotation of Oct 24 on prognosis after perforation you refer to the view sometimes held that such cases, subsequent to operation, have a better prognosis than others This was not confirmed, from the point of view of working capacity, in the observations of Scott and myself on a series of 430 cases of gastric and duodenal ulcer followed for not less than 3 and up to 20 years (*Lancet*, 1935, ii, 710) In 24 cases of perforated duodenal ulcer the subsequent average annual sick absence was 16 1 days for digestive disorders and 29 3

In England Now

A Running Commentary by Peripatetic Correspondents

To what limit of vituperation may honest indignation extend ? Though my father early impressed on me that common swearing merely showed inadequate knowledge of the richness of English, I am tempted to resort to expressions usually attributed to bargees and Billingsgate I cannot vie with Sterne's magnificent curse in *Tristram Shandy*, nor hope to approximate to the categorical minutiæ of François Rabelais, so as my father's teaching is still with me, I can only borrow a device from Leigh Hunt's *Reply to X* and say —— Were I to apply to A and B and C the terms improvident waster, callous dullard, losel, moron, defeatist, it would only be to demean still further these, the meanest words in the English tongue This ebullience is fired by the sight of waste by the few when the many are sparing no effort in salvage, in conserving fuel and water, in saving food and in sparing transport Some one said we shall win the war when every bus traveller puts every bus ticket in the box on the platform, for that will show that everyone has realised that no contribution to the war effort is too small to matter For myself, I think the truth was in him Unfortunately we have professional brethren who fail to exercise today's necessary care in prescribing and using drugs and the materials of our craft—however enthusiastic they may be over paper salvage and the like Fortunately they are few, but they still stick out like the proverbial sore thumb, and not only exasperate the rest of us who are doing all we can to relieve the acute drug shortages, but penalise patients throughout the country by their imprudent prodigality There are those who will *not* use the National War Formulary and cling to the obsolete National Formulary, thus not only wasting drugs, but man-power also, for pharmacists and NHI officials are put to much needless work by this obstinate refusal to cooperate There are the reckless prescribers who order a couple of ounces of ointment when half an ounce would suffice, or who meet minor maladies with " a couple of aspirins " when one would be adequate (if, indeed, it is the best drug to exhibit) This, mark you, despite the great shortage of ointment bases and the demand on phenol for war needs, but perhaps they do not know that aspirin is made from *phenol* Another example is morphine, one hears that the stocks held are fair, but they will not bear squandering, gr $\frac{1}{6}$ or gr $\frac{1}{8}$ will deal with most cases so why use gr $\frac{1}{3}$ or gr $\frac{1}{4}$? Alcohol and glycerin are scarce and needed for a host of purposes connected with war, yet there are those few who blithely prescribe preparations containing large amounts, just as they did in peace If the iniquity is pointed out they claim that nothing else will do for this patient, which demands a rude answer—the ruder the better—in ninety-nine cases in a hundred Well-informed rumour has it that the immediate result of the liquid paraffin order was a great increase of NHI *prescriptions for this substance both in number and in* the amounts ordered This could only mean that selfish interest dictated attempts to circumvent the order Then there are the proprietary addicts It is perhaps easier to write "℞ A & Co's Elixir elegans," than to prescribe a mixture designed specifically for the patient's needs, but it is less economical from every point of view

Having thus boiled over I may revert to a state of simmering, and repeat that it is fortunate there are so few doctors to whom these criticisms apply But there ought to be none, lukewarm efforts have no place in the nation's life today, and those who are not entirely with us are against us The magnificence of Russia's determination and sacrifice, the suffering of our allies and friends in occupied countries, demands that we do not scamp our part even in the smallest detail

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Sir StClair Thomson's address to Edinburgh students on a house-surgeon's memories of Lister is a tribute from one who was his clerk, dresser and house-surgeon during the time when in London he was little better than a professional outcast He recalls how another surgeon (a president of the Royal College of Surgeons and Fellow of the Royal Society) often raised an appreciative laugh by telling anyone who came late into his r theatre to shut the door quickly for fear that one Lister's microbes might slip in, how he was ob by the sisters, and how, ten years after his arrival London, he was referring to the smallness of his cl as " a humiliating experience " Yet when his theatre was almost forsaken by students it was with foreigners Why was the prophet so long without honour in his own country ? That Lister changed gical wards from stinking death pits to something like what they are now, turned surgery from a rearguard action to a splendid victory, that he lit with the causal torch the dark and dangerous places of midwifery and of groping medicine—these are truisms today and were being glimpsed by many outsiders then, but those in closest contact with him were blind to it all Jealousy, of course jealousy in high places which set the style, jealousy which varies inversely with the square of the distance, feeds on hurried sight and sound, increases with age and therefore resents innovation, a late sexual sublimation, perhaps, which may have been valuable at times in checking spurious leaders, in testing, toughening and developing leadership, jealousy the spur, blinding jealousy which (see your postwar autobiographies) attacks the most able, jealousy which in this case cost hundreds of lives

Then there was another thing against Lister—he was impeccable If a man is a known sinner his rivals can more safely admit his genius A doctor who is a drunkard is allowed to be clever If you are doubtful about this try the effect on your own brain of reading a biography written in our own day, say one of Lytton Strachey's, or that excellent couple " Grey Wolf " and " Grey Steel," which show up their subjects in no indulgent light, and see if you don't finish up with an admiration, almost a love, for Kemal or Gordon or Manning Then read one of the old Victorian eulogies and if you can believe it's the whole truth you will almost loathe the fellow Of all Lister's great qualities two mattered his mental acuity, that gleam of gold that perceived the parallel between the even greater Pasteur's discoveries and wound suppuration, and the tenacity that held him to this view Had Lister been an evil liver and yet had these two, posterity's gratitude would have been the same and might have come sooner

Today the world is in some such morass as the surgical world was before Lister came, and we are threatened with many prophets. How shall we know those of truth ? And here one must profoundly disagree with Beethoven, quoted in this address, " where there is no great character there is no great man " If words have their usual meaning this is manifestly absurd, some of the world's greatest men have had most contemptible sides to their characters The greatest practical philosopher, whose thought touches every one of us every day (for example, he was doing an early experiment on food refrigeration when he died) was the sycophantic, corrupt —and what's more, caught-out—Lord Chancellor, Francis Bacon No, our prophet may not come stainless though I think we would do well to reject the more or less death-bed conversions of ancient sinners His message ? It will consist of certain primaries that are emerging from the ferment of men's minds even now that the old economy that burnt food in one part of the world while people starved in another, that sanctioned unemployment with its *triple death of labour, skill, and* soul must itself die, that possession of the relatively empty Y-chromosome does not give men any superiority over women with her two full Xs (O ye proud medical schools) and because a man inherits half his father's genes haphazard that should not entitle him to privilege or to be a legislator, that no-one is entitled to superfluity while others want, and so on and so forth Our prophet will declaim such things with an air of great originality and probably some peculiar emotional twist of his own, and everybody who has been groping towards these approximations to the rational will say, " How wonderful he is ! " All except those who are near him or of his own trade, and they will be intensely jealous and try and pull him down, giving the noblest reasons, but if he has been through hell before, this will merely spur our prophet on Lister's temporary misfortune was that he had not been through hell and that even with a gloriously demonstrable creed his work was the only assailable part of him If

Examination —She was thin, wasted, dehydrated and lrowsy Temperature 97° F , pulse rate 60, respirations 20 She vas just able to complain of headache There was no airiunger Tongue moist Chest and heart normal Bloodressure 100/65 mm Hg Abdomen n a d Scattered petechial ash over limbs, trunk spared Well marked neck rigidity Fundi could not be seen Pupils equal, reacted Turbid CSF, pressure 230 mm On film, pus cells +++, meningo cocci +++, the latter confirmed by culture Urine no albumin Benedict's test, bright red Gerhardt's and Rothera's tests strongly positive Blood sugar 234 mg %

Treatment —6 g of sulphapyridine were given intramuscularly immediately, and a further 6 g by mouth during the first twelve hours A total of approximately 40 g were given in the next seven days, and 20 g of glucose and 12 units of soluble insulin were given four hourly for three days Next day she was much improved, two days later pulse and temperature were normal, the rash had disappeared and there was no complaint of headache Recovery was uneventful, with no residual focal neurological signs On Feb 24 the sugar-tolerance test was fasting 212 (50 g glucose), 260, 388 She was stabilised on 150 g carbohydrate and 28 units of zinc protamine insulin

The complaint of headache and the purpura at once suggested the possibility of meningitis, which was soon confirmed by the neck rigidity and lumbar puncture Contemplation of Cole's cases and mine suggests that lumbar puncture should be performed on all diabetics in coma where the history and clinical signs are in the least unusual for diabetic coma This policy will prevent meningitis being overlooked and will lead to the prompt diagnosis of intracranial hæmorrhage to which diabetics are liable

The marked influence of meningitis in increasing the severity of diabetes is obvious in Cole's case 1 , in my case the effect on the diabetes appears slight The ages of these two patients and the severity of the diabetes may explain the difference Cases 3 and 4 are clearly not diabetics Case 3 is not recorded as having received any insulin, while case 4 had 210 units in ten days This quantity of insulin would not have been sufficient to treat a case of diabetic coma The same conclusion may also be drawn from the results of the sugar-tolerance tests Glycosuria and ketonuria are not infrequent in acute intracranial conditions and also, in my experience, in pneumonia There may be some temporary disturbance of carbohydrate metabolism, but insulin treatment is not required unless the clinical picture of diabetes develops

The association between these two common conditions is suspiciously rare It is to be hoped that Dr Cole's excellent account may lead to more frequent recognition of the association of two diseases which are today so amenable to treatment even when occurring together

Ipswich RONALD JONES

ANÆMIA IN PREGNANCY

SIR,—Dr Mole's assumption that the two groups of women, the effect of iron on whose hæmoglobin levels during pregnancy we published in the *Lancet* on Aug 15, are statistically of different " populations " is permissible since the difference between their means falls outside three times its standard error (1 04) The standard errors of the mean of each group initially is approximately 0 7 This difference, however, has no effect upon the conclusion drawn—viz , that iron administration has a beneficial effect upon the hæmoglobin levels in the later part of pregnancy

From the higher hæmoglobin levels of the untreated cases at the start it seems safe to assume that the iron reserves of these women were, if anything, somewhat greater than those of the women who later received iron, but despite this initial advantage their mean hæmoglobin levels fell by 9%, while those of the treated group rose by 2% Even though these two groups may have been derived from statistically separate populations, each group is homogeneous within itself, and the probability that the terminal figures are significantly different from the initial ones is over 20 to 1 for the treated group and many millions to one for the untreated

If those cases in the untreated group with initial hæmoglobin values over 90% be excluded, thus reducing the number in this group from 196 to 155, the inferences to be drawn from the results remain the same The two groups then have initial means of 76 and 75%, a difference which is statistically insignificant, yet the terminal averages for the two groups remain at 70% for the untreated and 77% for the treated Thus Dr Mole's criticism that the heterogeneity of the population invalidates the conclusions that we drew seems to be unjustified Actually the fact that the women in the untreated group had a somewhat higher hæmoglobin level initially, and yet fell so much more severely at the end, seems to strengthen rather than to detract from the argument we advanced for the administration of iron

Finally, so far as the planning of the experiment was concerned, it should be pointed out that at the time of examination of the patient's hæmoglobin the person carrying out the determination had no knowledge of the results of the previous investigations Further, the patient was or was not given iron according to the day, Tuesday or Wednesday, of her first examination, and was quite at liberty to, and often did, change her day of subsequent visits to the hospital, so that her presence on any particular day would provide no clue as to which group she belonged to, and thus lead to any bias on the part of the investigator, however unconscious

We feel that Dr Mole should have taken the trouble to assure himself more fully concerning the planning of *the experiment before making criticisms for which there* is no foundation

H A HAMILTON
Farnborough, Kent HELEN P WRIGHT.

STERILISATION OF SULPHONAMIDES

SIR,—The technique for the sterilisation of sulphonamides described by Major McCartney and Dr Cruickshank depends for success on the presence of a small quantity of moisture in the powder which may in some circumstances be absent At this hospital we have examined several samples of sulphonamide powders and have not yet found one to be sterile on receipt from the manufacturers The need for a completely effective method of sterilisation is therefore obvious Our work here is not yet complete but we have found that sulphapyridine and sulphathiazole can probably be sterilised effectively by dry heat at 150° C without either decomposition or aggregation of the powder into lumps Samples of sulphanilamide, however, have varied greatly in their behaviour towards heat, both as regards decomposition and aggregation , and an attempt is now being made to investigate the water content and try to correlate this with the effect of heat on the sample It seems possible that differences in moisture content may account for the varying results obtained by different workers and for the difficulty sometimes experienced in carrying out published methods for the sterilisation of these powders

Salford Royal Hospital JOHN B. LLOYD.

ANOTHER REASON FOR NOT SNEEZING

SIR,—Until four years ago I was afflicted at least three times a year by the common cold, of the type that did not leave me for three or more weeks So distressing was the catarrh and the general unpleasantness that I tried all the advertised cures, but still I suffered I reflected that in my own case a cold invariably announced its arrival by one, two or more sneezes A sneeze might not be followed by a cold, but a cold was invariably preceded by a sneeze So I adopted the empirical procedure of not sneezing I prevented a sneeze by grasping my nose firmly between my fingers or pressing my upper lip in the centre, or by sneezing into my belly, but whatever means were adopted I did not sneeze *through* my nose In the four years which have passed I have travelled fairly widely, and my duties have brought me into almost daily contact with colds , yet, in four years, I have not had a cold ! Is there one other person who will conscientiously try this preventive cure ?

George, C P South Africa THEODORE JAMES

PALSY AND INTRAMUSCULAR SULPHONAMIDE

SIR,—May I add a further case to the list of nerve palsies following intramuscular injection of sulphapyridine ? This occurred in a man suffering from appendicitis with peritonitis who, after operation, was being treated with soluble sulphapyridine injections given into the outer side of the thigh One morning, following days for illness of all sorts, as compared with 12 6 days for digestive disorders and 25 days for illness of all sorts in 216 cases where perforation had not taken place In 41 cases of perforated gastric ulcer the subsequent average annual sick absence was 14 8 days for digestive disorders and 23 8 days for illness of all sorts, as compared with 13 9 days for digestive disorders and 25 2 days for illness of all sorts in 149 cases where perforation had not taken place

London E C 1 H H BASHFORD

CÆSAREAN SECTION AND THE CRUSH SYNDROME

SIR,—Two of the annotations in the *Lancet* of Oct 10 were juxtaposed as though a link between them had been sensed—the volume of the blood In the woman at term the blood volume is increased, tending to conserve her from shock during cæsarean section under spinal anæsthesia in the crush syndrome, although the kidneys are affected by changes induced during the burial, serious renal failure seems precipitated only by transfusion and the giving of fluids to combat shock The two types of case are brought closer together by the occasional occurrence, in women previously apparently well, of renal failure after childbirth (postpartum suppression of urine) In this the blood, in virtue of its volume, not always sufficiently reduced by the birth loss, is operative It acts in concert with the effect of labour on the kidneys Free drinking, the pressing of fluids immediately after labour, enhances its force The cases are comparable with the anuria induced by emptying too suddenly the urinary bladder over-distended in men with enlarged prostate, always preceded by much distress and straining Conversely, the common absence of renal impairment in women with large ovarian cysts, the abdomen in size simulating that of late pregnancy, but the activity—the manner of living—in many cases being totally different, is associated with a volume of the blood subnormal for the weight of the patient That a too large blood-volume is pathogenic, qua renal failure, in the cases mentioned, is indicated by experiment—therapeutic procedure That in many cases of large ovarian cyst the blood-volume is reduced—is less than in normal non-pregnant women of the same weight—is postulated by argument Let us not forget that man is a high-pressure machine, and that the blood (in the aorta and renal capillaries) and the urine (in uriniferous tubules) are incompressible

I should like to dispel the fears of those timid at performing cæsarean section under spinal anæsthesia lest shock should appear I have performed the operation something more than 120 times, most of my cases—all for many years—have been done under spinal anæsthesia The needle is passed with the patient on her side, lying on the operating table. The space between the third and fourth lumbar vertebræ is best I pass the needle obliquely, the interspinous ligament being avoided, usually it goes in at once—the procedure seems more easy in the pregnant than in the non-pregnant After allowing about a drachm of cerebrospinal fluid to escape, 1 8 or 1 9 c cm of a 5% solution of tropacocaine (now unprocurable) is injected, 4 minutes by the watch, a nurse counting aloud the quarter minutes, being taken to make the injection The uterus is emptied with the patient flat, shortly after, the table is raised into the Trendelenburg position Since 1929, I have always performed the lower segment operation, the incision through the uterine wall has been invariably transverse I have not yet cut the uterine vessels, but often bleeding has been free for large veins medianly occur When labour has begun, the operation under spinal may be almost bloodless In one case, I found I had incised the vagina transversely, after extraction of the child the fringe of the cervix was seen above the incision I have never attempted to remove a large ovarian cyst under spinal with the patient flat because of the low blood-volume and fear of shock In my experience, in the pregnant woman, shock does not occur in these cases

I have had one cæsarean death under spinal, directly due to the tropacocaine, it was caused by neglecting the precautions mentioned and happened long ago In not one of my other cases has shock appeared, although at the operation no ephedrine or other drug has been given, and afterwards the patient has been starved for 24 hours the fluid intake greatly restricted, the patient allowed to drink freely only after the emission of urine in plenty Only in a very few of all the spinal anæsthesias I have induced—about a 1000—have I seen any sign of postanæsthetic complication—headache, eye-troubles—and these have been evanescent Cæsarean patients, as indeed all the others subjected to spinal anæsthesia, on return to the ward have been kept in the Trendelenburg position for 6 hours, the feet of the bed at the lower end being placed on chairs I remember one stillbirth in a breech case—I think I broke the child's neck by over extension during extraction, a colleague said it was otherwise I once performed cæsarean section in a case in which it was pretty certain that the child was dead, as the event proved, it was performed deliberately The pregnant woman being more susceptible to the effects of tropacocaine, exactitude of dose—even 0 1 c cm makes a difference—is highly important In all my cases the drug has been by itself effective, to the extent indeed that usually an anæsthetist has not been invited to attend No morphia is given before

So impressed have I been with the beneficent effects of spinal anæsthesia in patients on whom I have performed cæsarean section—the child crying at once, bleeding from the emptied uterus being eliminated—that for many years I have used spinal anæsthesia in ordinary midwifery cases, especially for first babies After the injection, the patient is placed in the lithotomy position, athwart the bed Forceps must be used, episiotomy is performed As with the cæsarean cases, the child cries at once, if the placenta causes trouble it is removed manually, otherwise postpartum hæmorrhage does not occur, the perineal wound is sewn up at leisure The bed is raised into the Trendelenburg position before the patient's legs are brought down, chlorine douches before and after are used, no complication ensues when asepsis is assured I have performed the operation in patients' own homes, in a breech case the effect of spinal was wonderful

Spinal anæsthesia has a further and a far-reaching advantage it cuts out all activity of the levator ani muscle during extraction In normal cases, and especially in well-developed primigravidæ, contraction of the muscle is the great obstruction to birth Paralysed by the drug, the muscle becomes flaccid, and its injury—the incising of it from its anterior (pubic) attachment by the passing occiput—so common in midwifery, whether forceps are used or not, but rarely observed at the time is prevented or much limited The result of using spinal is that subsequently, with the resumption of ordinary activities, the muscle is able to function as efficiently as before, preventing visceral extrusion, the so-called prolapse of pelvic viscera, a major misfortune

I miss any reference in your annotations to the use of the Trendelenburg position, both in the dogs subjected to crushing of a limb and in patients submitted to cæsarean section under spinal anæsthesia When will the position of the patient be recognised as of the greatest importance in the prevention of shock? When will a too great blood-volume be regarded as a cause of renal turgescence, and damming of the urine in uriniferous tubules and of the renal blood flow with a necessarily resulting oliguria?

Rugby R H PARAMORE

COMA IN CEREBROSPINAL FEVER WITH DIABETES

SIR,—Dr Leslie Cole has done good service in drawing attention (Oct 10, p 421) to the problems of diagnosis and treatment of patients in coma caused by meningococcal meningitis and diabetes A case recently under my care illustrates the diagnostic difficulty and shows that very severe meningitis may not exacerbate the previous diabetes

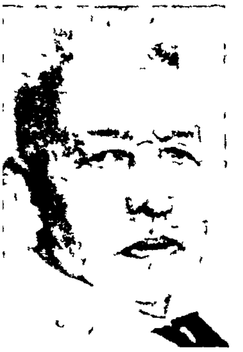
On Jan 26, 1941, I was called in consultation to see a woman of 54 alleged to be in diabetic coma On Jan 24 she had complained of severe headache and vomiting Next day a purpuric rash had developed on the limbs and there were complaints of limb pains, more vomiting occurred She had been under treatment since November, 1935, for diabetes mellitus and had been taking 10 units of zinc protamine insulin once daily and no fixed diet

Obituary

LUDWIG ASCHOFF

"He brought order and clarity into the description of morbid processes"—A Hoche

The death at the age of 76 of Karl Albert Ludwig Aschoff, for thirty years professor of pathological anatomy at the University of Freiburg, will seem almost unbelievable to those who knew him, for it seemed that such a vital man could never die. Throughout the medical world he is renowned for his original researches in many fields of pathology—appendicitis, arteriosclerosis, rheumatic carditis, gall-bladder disease, bile formation, cholesterol metabolism, thrombosis, gastric ulceration, thyroid disease and the concept of the reticulo-endothelial system. His work on rheumatism was first published in this country (*Brit med J* 1906), and his other important contributions were collected in *Lectures on Pathology* (1924), based on the Lane and Janeway lectures which he delivered in America that year. His *Textbook of Pathology*, of which an English translation was at one time projected is an invaluable work of reference as is his *Principles of Pathological History*, which was translated in 1902.



J F Lehmann

Life at the Institute at Freiburg under Aschoff was an experience. The brilliant lectures, the early morning review of current literature which ranged from holiday postcards and announcements of marriage of old pupils to the latest medical and general scientific literature, the two long laboratories—the Nordsaal, where the German assistants worked and as their song went "Schneiden und Färben und bis zum Sterben halten sie die Treue ihrem Institut," and the Südsaal which accommodated the foreign voluntary assistants, usually a strange medley of maybe an Englishman, one or two Americans, several Japanese, a Spaniard, and a Greek or a Dutchman. At four o'clock there would be coffee, or on special days tea—Aschoff always told how he adopted the English habit when he was at the Tropical Diseases Hospital in London in the early part of the century. Perhaps the chief would tell one of his famous stories, how he tried to pull a rickshaw, or of the Black Sea Kapitänin whose efficiency was tested by the sphygmomanometer. Occasionally there would be an evening party at Briems or the Falken and he would be joining in the singing, and if it promised to be a long night postpone the morning meeting an hour or even arrange for us to meet at 11 A.M. in the Alte Burse to drink Kalte Ente. He would join the ausflugs to little inns in the Schwarzwald and invited his students to his home "Ze Eschenhof," perhaps to share the Christmas pudding sent each year from England, to meet his charming wife who often sent a typescript copy of his letters as his miraculous microscopic handwriting might be difficult to decipher for poor German scholars, perhaps to see Jürgen his medical student son, or go down to the basement where his daughter did the most beautiful bookbinding.

Aschoff was great in everything save physical stature; he was a living example of all that was best in the old cultured Germany—often, if a specimen had been carelessly cut or crudely dissected, he would shake it saying "Das ist bosche"—and a devout member of the Evangelical Church. He staunchly upheld old university traditions and almost invariably wore a Zipfel of the Burschenschaft-Alemannia of Bonn while the Schmisse from his days as Aktivitas were clearly to be seen. His heart was heavy at the departure of his friends and colleagues in the medical faculty at Freiburg—Tannhäuser to Boston, Möllendorff to Zurich. But he was fearless in expressing his views, and his farewell address to his students and friends in 1936 was entitled Academic Honour, Academic Freedom, Academic Science.

Even after his retirement he continued to work, but he turned his attention more and more to the history of medicine and was appointed director of a newly founded institute. It was an old love, for in 1920 he had published a comparative table illustrating the social and historical evolution of medicine and his last book was the brilliant pathological section of the protoplasma monograph *Hundert Jahre Zellforschung* (1938). Aschoff's last visit to this country was in June of that year, when he delivered the Finlayson lecture in Glasgow on the history of the circulation. It had been hoped to have a meeting of his old pupils, but his asthma, an ever-present torment, forced him to hurry home to the pure air of the Schwarzwald, scattering notes of regret such as one that he was sorry he could not again visit Oxford and drink Magdalen Audit and enjoy himself.

A. H. T. R-S.

GENERAL PRACTICE OF YESTERDAY, TODAY AND TOMORROW

ERIC GARDNER, M.B. CAMB.

Looking back over a good many years of general practice I remember diagnoses and methods of treatment which enjoyed a fashion and then died out. When I was a student operations to immobilise a floating kidney became so general that in my final examination in surgery, the viva was entirely taken up by a discussion of the signs and symptoms of the condition and the surgical procedures for their relief. The mere diagnosis of floating kidney made to a susceptible person was enough to originate a train of neurasthenic symptoms. Such patients, fearing operation, flocked to physicians, and for months and even years slept with the foot of their beds raised, spent hours each day lying head downwards on an inclined plane, and never assumed a vertical position without first adjusting a kidney pad and a carefully laced corset.

Shortly before the 1914–18 war we began to hear a good deal about intestinal stasis as a cause of auto-intoxication. For years treatment was directed to the colon, some authorities even striving to obtain an evacuation after every meal. Bulgarian sour milk was prescribed, in the hope that the harmless "Bulgarian bacillus" would outgrow other more dangerous members of the intestinal flora. It enjoyed remarkable popularity, for it was unpalatable stuff, never very easy to prepare and few people used it properly; indeed a report on the constitution of the various preparations for souring milk showed that hardly any of them contained the bacillus.

Dietaries were compiled, some even imposing a fast once or twice a week; others gave full scope to the personal prejudices of their authors. Surgeons began to operate on the colon; it was freed from adhesions, straightened, short-circuited, and lesser and greater lengths of it were removed even to total excision. We were taught that stasis was due to the formation of loops and adhesions, and particularly to kinking at the hepatic and splenic flexures from enteroptosis, so that abdominal belts were again prescribed. An abdominal support, sold in thousands, consisted of a steel plate worn just above the symphysis and kept in position by two springs passing round the pelvis. One patient owed his life to such an appliance, not because it cured his enteroptosis, but because this armour-plating saved him from the nose cap of a German shell. Treatment also included abdominal massage with or without artificial support, intestinal disinfectants such as cyllin and salol, vaccines (then on the crest of a wave of popularity) and liquid paraffin. The final attack on the colon was made by lavage, and establishments were opened whose sole treatment consisted in washing out the large bowel. For some years they did a large business, and it was interesting to go into one and note the rubber tubes hanging up, neatly ticketed with well-known names.

The use of liquid paraffin alone has survived, though it is not in such demand as it was when I lunched in Harley Street many years ago. Cigarettes had been lighted, and the butler went round the table with a salver on which were three groups of liqueur glasses. He pointed to each in turn, "Brandy, sir. Curaçao. Paraffin, sir." We may be thankful that the state envisaged by Leonard Williams in 1918 has not materialised. He wrote:

> Victory is now in sight. In the new Utopia where stasis will be regarded as a sin more sinister than sedition and surfeit more unseemly than schism, fasts will cease to be the farcical

injection, he complained of severe pain in the lower part of the leg and foot He was found to have an area of anæsthesia over the outer side of the lower third of the leg and over the dorsum of the foot, with complete foot-drop The calf and plantar muscles were not affected It appears that only the external popliteal bundle of the sciatic nerve was damaged The anæsthesia, and anterior tibial and peroneal paralysis, remained unchanged over several weeks, after which I left the hospital and lost sight of the patient In this case the patient was not at all displeased with the accident as he was a prisoner from the neighbouring gaol and had been serving a long term for recurrent housebreaking

Leigh, Lancs D. K SAMBROOK

SCLERODERMIFORM SARCOID

SIR,—In last week's issue (p 524) you coin or quote the term "sclerodermiform sarcoid" and state that "the term sarcoid is applied to a group of neoplasms of the skin or subcutaneous tissue, in appearance resembling connective tissue and of low malignancy" To this one feels tempted to say *tot verba tot errores* Sarcoids may occur in any tissue and in any organ, they are not neoplasms but granulomatous tissue, they do not resemble connective tissue but have the appearance of non-caseating tuberculous foci devoid of any stainable or culturable micro-organisms, and they are as little benign or malignant in the strict sense as any tuberculous, syphilitic or leprous lesion Finally the only link between scleroderma and sarcoid is our ignorance regarding the causation of either A subcutaneous distribution of sarcoids was first described by J Darier and G Roussy in 1904, at a time when only the cutaneous manifestations of the disease were known Subcutaneous sarcoidosis is still today sometimes called "sarcoid Darier-Roussy" As such subcutaneous sarcoids differ in no way from sarcoids of other tissues, it seems pointless to retain a special eponymous term for this particular manifestation of a systemic disease already burdened by a varying combination of eponyms (Besnier, Hutchinson, Boeck and/or Schaumann)

Lambeth Hospital HERBERT LEVY

PULMONARY EMBOLISM BY AMNIOTIC FLUID

SIR,—Attention has recently been drawn in the *Lancet* (Oct 24, p 490) and in the *British Medical Journal* to a paper on maternal pulmonary embolism by Steiner and Lushbaugh (*J Amer med Ass* 1941, **117**, 1245, 1340) which gave details of 8 cases of maternal death, 2 during labour and 6 immediately after, and of the conditions found at post-mortem examination It put forward convincing evidence that these deaths were due to pulmonary emboli in the smallest arteries, arterioles and capillaries, composed of meconium mucin, fatty material resembling vernix caseosa, and epithelial debris The macroscopic appearances in some showed no important abnormality, in none any lethal change The writers of the paper suggest that the predisposing factor in the cause of the condition is some laceration in the placenta or membranes permitting entry of liquor amnii to the maternal circulation and that death occurs not from mechanical obstruction, due to an overwhelming shower of foreign matter into the maternal circulation but is rather in the nature of an anaphylactoid shock, comparable, for instance, with what occurs on the transfusion of non-compatible blood In the cases reported by Steiner and Lushbaugh there was one undelivered primipara, aged 26, and she died in fifty-five *minutes after the first sign of collapse* A case of sudden maternal death during labour occurred recently in a primipara and could not be accounted for until Steiner and Lushbaugh's paper offered a probable explanation The case history is as follows

A healthy young primipara aged 20, after a normal pregnancy, fell into labour about 11 PM on April 8 A routine prenatal examination made by the district nurse that morning had found all well, with the child lying left occiput anterior, and in the evening the patient had been out to supper and had been "well and happy" Labour pains began after she went to bed and progressed normally She was sick in the middle of the night and the husband wanted to call the nurse then, but the patient said not yet She was quite cheerful between the pains The husband went out shortly after 6 AM and before doing so took up a cup of tea to his wife About 7 AM her sister went into her room and talked with her she seemed all right About 7 30 the sister again went in time the patient was lying with her head under the and she did not speak The nurse arrived about 8 15 found the patient dead When she was seen about 10 there was marked lividity of the face and the tongue was truded between the teeth, appearances suggesting death asphyxia There was nothing in the mouth or larynx there was no vomit on the bed Rigor mortis was beginning

A post-mortem examination was made at 5 PM was nothing in the mouth, throat or respiratory passages to obstruct respiration Careful search failed to detect the presence of a visible embolus in the pulmonary vessels The lungs were not œdematous The pericardial sac was full of clear fluid The heart was contracted and empty, the valves normal There was no engorgement of cerebral vessels The os uteri was fully dilated, the child's head well down in the pelvis, the membranes unruptured The uterus was not opened

Ludlow, Salop T HUNTER.

SPERM SURVIVAL

SIR,—In taking specimens for the investigation of sterility Tynen and Ranson favour a sheath which has been previously sterilised and Dr Simpson recommends masturbation in a room adjoining the examination room I found by experience that the sheath method of collection was unsatisfactory owing to the fact that spermatozoa although present in large numbers often showed no motility I concluded that the sheath contained some chemical which killed spermatozoa and subsequently read with great interest Mr Ranson's investigations (*Lancet*, 1937, i, 1400) which confirmed this assumption To get over this difficulty I have for many years instructed my patients to collect specimens by the following method They take to bed with them a sterile bottle with a wide neck and screw-top lid which they keep at body temperature by placing it under the bedclothes They then indulge in normal sexual intercourse with their partner, taking care to withdraw just before the crisis and ejaculate into the bottle This of course must be kept at body temperature until the examination, a good plan for doing this in transit is to keep the bottle in the trouser pocket By this method of collection I have often observed motility in a specimen 24 hours old

Wimpole Street, W1 A H HARKNESS

EFFECTIVE DOSAGE IN GONORRHŒA

QUICK cures of gonorrhœa have been reported in the German Army Morschhäuser[1] tried out various sulphonamides in different dosage, culminating in a two-day treatment with sulphathiazole at the rate of 10 tablets a day With this the relapse-rate in 731 cases was 5 4%, and he found that the administration of 4 tablets in the morning, 3 at midday and 3 in the evening had given as good results as any other method, the relapse-rate in 355 cases treated in this way being again 5 4% Heyn[2] had also tried various dosages of sulphonamide, ending with 5 series of 250 cases each treated with sulphathiazole His results in these series were

(*a*) Treated with 10, 8, 6 and 6 tablets on successive days, and intraurethral injections of albargin, 8% relapses

(*b*) The same without local treatment, 10% relapses

(*c*) Treated with 10, 8 and 6 tablets on successive days, and local treatment, 8% relapses

(*d*) The same without local treatment, 9% relapses

(*e*) Treated with 10 tablets the first day and 8 the next without local treatment, 10% relapses

Taggeselle[3] in a lecture to health officers mentioned that in 110 cases of gonorrhœa treated with three tablets of sulphathiazole three times a day on two successive dates the cure-rate was 88% It is understood that we now have a good supply of sulphathiazole in this country.

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[1] Morschhäuser, B *Dtsch Militärarzt*, 1942, 7, 318
[2] Heyn, W *Ibid*, p 322
[3] Taggeselle, *Münch med Wschr* 1942 89 739

CHADWICK LECTURE —On Tuesday, Nov 10, at 2 30 PM at the London School of Hygiene, Keppel Street, W C 1, Miss Joyce Adburgham, LRIBA, will deliver a Chadwick lecture on land settlement—its sanitary and architectural aspects and after war possibilities

Notes and News

APPROVED NAMES FOR DRUGS

DURING the war the General Medical Council, on the recommendation of the British Pharmacopœia Commission, has issued lists of approved names for substances produced by British manufacturers, in some instances under licence granted by the Comptroller-General of Patents, Designs and Trade Marks The lists have appeared in these columns The intention has been to recognise non-proprietary names which could be used freely by manufacturers, and thus to avoid the difficulties which result from a multiplicity of names for the same substance The Pharmacopœia Commission have now formed an advisory committee on nomenclature to assist them in the selection of approved names Suggestions for suitable names will be invited from the manufacturers interested The commission have adopted the following principles as a guide in the selection of names

1 Names should preferably be free from any anatomical, physiological, pathological or therapeutic suggestion This applies only to chemicals Such suggestion cannot always be excluded in the naming of biological products

2 The accurate chemical name should be used if suitable, when it is unsuitable the attempt should first be made to form a name by the combination of significant syllables from the scientific chemical name, and to include an indication of the potent element or constituent of a compound

3 Names should preferably be of two, three or at most four syllables

4 Names should be distinctive in sound and spelling, and should not be liable to confusion with those already in use

5 Names which are difficult to pronounce or to remember should be avoided

6 The addition of a terminal capital letter or number should be avoided

7 Names used in the current United States Pharmacopœia, or adopted for the next revision, should be used either as principal titles or as synonyms

8 Names used in the *British Pharmaceutical Codex* or in *New and Non-Official Remedies* should receive preferential consideration

9 The following well recognised terminations should be used as far as possible

Termination	*Applied to*
-ine (Latin ina)	Alkaloids and organic bases
in (Latin inum)	Glycosides and neutral principles
-ol	Alcohols and phenols (OH group)
al	Aldehydes
-one	Ketones and other substances containing the CO group
barbitone or itone	Barbiturates
-cane or aine	Local anæsthetics

The commission hope that the approved names will be generally adopted, and will especially deprecate the introduction of new names for substances for which approved names have been published

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University of Oxford

An additional examination in medicine, surgery, and midwifery for the BM, BCh degrees will be held at the end of March, 1943

University of London

Sir Girling Ball has been elected dean of the faculty of medicine for the period 1942–44 and Prof G B Jeffery, FRS, dean of the faculty of science

Economics of Tuberculosis

The National Association for the Prevention of Tuberculosis, together with the Committee for the Study of Social Medicine, have organised a piece of research from which it is hoped to discover when the basic income of the tuberculous household is sufficient to obtain an adequate diet in war time The committee, under the chairmanship of Dr G Lissant Cox, has prepared a questionnaire, which has been sent to some hundred tuberculosis officers and their health visitors throughout the country Facts will be collected from cases with positive sputum whose annual income is less than £250 The results are being analysed, and will be submitted before publication to Prof Major Greenwood. It is hoped that a preliminary report will be issued shortly

Royal College of Physicians of London

At a comitia of the college on Oct 29, with Sir Charles Wilson, the president, in the chair, Prof W G Barnard, Major General A G Biggam, Dr Geoffrey Evans, Sir William Fletcher Shaw and Sir John Stopford were elected councillors Dr A E Clark-Kennedy was re elected a representative on the committee of management of the Conjoint Board, and Sir Comyns Berkeley a representative on the council of the Central Midwives Board The president nominated Dr W E Hume as Harveian orator and Dr J W Brown as Bradshaw lecturer for 1943, and announced the appointment of Dr A H Gale as Milroy lecturer for 1944, the award of the Streatfeild scholarship to Miss Enid Sampson, the Jenks scholarship to A J Graham, late of Epsom College, and the Linacre scholarship to C R Cheadle, of King's School, Canterbury

The following were admitted to the membership

M G C Ashby, BM OXFD, N D Compston, MB CAMB, W H Hargreaves LRCP, major RAMC, E J C Kendall, MB CAMB, Laurence Nagley, MD LEEDS, J L Penistan, MB LOND, Ernest Petrie, MB LOND, lieutenant RAMC, J S Pippard, MB CAMB, R E Rewell MB LOND, J F Smith, MB CAMB, surgeon lieutenant RNVR L W Smith, MB CAMB, R B Thompson, MB DURH, Andrew Topping, MD ABERD

Licences to practise were conferred upon the following 274 candidates (246 men and 28 women) who have passed the final examination of the conjoint board and have complied with the bye laws of the college

Patricia R Adlington, J N Agate P L Allen Eric Asquith, E O Barnes, A G Barnsley H W A Baron, T I Bartlett, R W Bazeley Ruth A Bell, C P Bennett H H Bentall, Charles Ben Yallouz, G G B Blackman J J Bligh S O Boldy, P B Booth, R J Bower, R A Bradford, P W Brand, Karol Braun, A H W Brenan, R N Briggs, Ruth M Burt, P H Buxton, N A Campbell, A W Capon, R J D Carrick L S Castleden, Marjorie F Chaplin, D P Choyce, Ann B Clark M W L Clements Philip Coggin Brown, J A H Collyns, D J Conway E G Cook, J B Cook, Rosemary I Cook, J A L Cooper P F Cooper Prudence A Cooper, M G Corcos, J M G Costello, Elizabeth F Cullis C F A Cummins Joan M Daniel, Owen Daniel A S Davidson D P Davis Herbert Davis, W E Denbow, R J Dickson, L S P Divers C E P Downes J T. Doyle, J G Dumoulin M P Durham, Vincent Edmunds H W Eldridge, C J L Elsdon, R N M Eminson J D Everall, G F Fearn, P D Fergusson, Maximilian Fertig R J Forster, G C Foster Smith M B Fox, J A Frais, B L Frank Peter Fry, D I Fullerton J O Gallimore, Mohamed Gamal el Din, C D Garratt, G E Garratt, K O George, Donald Gill, A E Ginn, J F Goodwin J V T Gostling, Sydney Gottlieb A J R. Green, Kemble Greenwood, J S Grewal, D J Hadfield R G H Hall A H Hamed S F Hans, D M Hare, A J M Hargreaves, J R Harries W A Harries R M Harrison, W H Helm, Frieda R Hendeles, J C Hesketh, S R Hewitt, A C Hicks, T S Hindle Frederick Hoffstein Betty Holden, Edward Holden, Peter Holliday, S C H Hood, P H S Hooper Heinz Horbacz A L Horetzky H J Houghton, Geraldine M Howard, S H F Howard, D A Howell T E Hughes, R B Illing, K P Isserlis P S Jaikaran, William James R T Jenkins, W R John P F Johnson, H R Jolly, O M Jonathan A E Jones, D V M Jones, W B E Jones, David Keidan, T D Kellock R W Kind, L G Kingdom, T G Kletz M A Kumar, Paul Lambah V H Lees, M E Lemerle, S G F Linton, Florence H Lomax, R M Lucas, G R W N Luntz, J C Macaulay, E L McDonald, Donald McGregor, R B McGrigor, Elspeth M McKechnie, Donald McKinlay, V J McLean, J K McMyn, K A McNeill, H G McQuade B C Main, Sydney Mandel, N M Mann, C W S F Manning, C W Marsden, D R I Mason, H F Melhuish, N L Mills, Albert Milton, D. L Mollin, Hyman Molotnikoff, Glyn Morgan J M Morgan A I Morrison, P C Moxon J R P Murley P B Newcomb, John Newcombe, G M J Nicholl, Bernard Nicholson Helen M Noble, C C Packman F E Peall, A N Pearce W H Petty A B Philipp, M P Pick, Roy Pilsworth, Ruby Posner Brian Pownall J R K Preedy, A I D Prentice E J T Prettejohn Edward Pringle N A Punt P M Ransford J B Raper J P Raw, A M Read N P Read, R G Rees Howell Rees, R K Reid, S C Rexford Welch, A L Ribeiro, A G Richards J D Riley, B H D Robinson R A Robinson S C Rogers, A J Rook L A Rook, Ruth Roseveare, M H Ryder, Olga B Ryland Leonard Sagorin, Olga M Sainsbury, J S Salem, J W P Salt, S C Sandifer, R H Sandiford H C L Scott, O L S Scott, James Sharkey, E G F Shaw, Patricia B Shaw, Archibald Sherwood, D S Short, G R M Sichel Jean V Simpson, Santokh Singh J J Slowe, Audrey U Smith, P A Smith W S C Snape, Angele M P Snow P J Spencer-Phillips J W Squire J S Staffurth, D A Stanley, J H Steeds, J P Stephens Lilian E Sullivan, G E Sutcliffe, Gwendolyn M Sutton, G F Swann, P G Swann, H F B Symons, J W Taylor, W V Taylor A R Thatcher, H E Thomas J B T Thomas, W R G Thomas, D G Thompson I F Thomson, D J Tibbs, R. N Ticehurst, A M B Tompkin, P A Trafford E J Tucker, D R Urquhart, Joseph Ward R L Ward, C R M Warner Edith M Waterhouse B P Webber M E Weber, J R K Wedd, M W West G H Wells Cole W H Whelan, Beryl D White Pamela M Wilcox, W V C Wiley, I A Williams, P R E Williams, J M Wilson, H P Wingate, J M Winn, Gerald Winocour Raymond Winston, J F R Withycombe, C R Wood and L P J Wright

Diplomas in child health were granted jointly with the Royal College of Surgeons to the candidates named in our issue of Oct 17 (p 474), and in public health to

Gwendolen M Allen-Williams, Nora E R Archer, Hilda M Robertshaw, F S D Thompson and H G Topping fancies of a few faddists and become facts The function of the police will be the purveying of paraffin, pilgrimages will be made not to Palestine but to Plombières, and Higginson will be High Priest

* * *

Operations for the removal of the tonsils and the appendix are often cited as being performed too often, but assuming that reasonable care has been taken to reach a diagnosis it is surely safer to operate than to temporise We can all remember one or more deaths from fulminating appendicitis in people whose initial attack should have been a sufficient warning A chronically infected tonsil will continue to give trouble till it is removed, and its definition by the late Mr Herbert Tilley as a tonsil causing acute or chronic ill health still holds good There have been changes in methods of removing tonsils from the time when it was thought only necessary to snip off under gas as much of a redundant tonsil as would slip easily through the ring of a guillotine, to the careful dissection of today, but these—even including the temporary relapse into the use of the electric cautery—were real attempts to improve the technique of a tricky and sometimes difficult operation

At one time it was customary to circumcise nearly all male children as a matter of routine Now I think wiser counsels have prevailed, and if the foreskin is freed at birth and can be retracted, only ordinary subsequent cleanliness is considered necessary I have pointed out to parents who insisted on their children being circumcised, that because Moses in charge of a body of people in a desert subject to dust storms under tropical conditions, and with almost all the available water used for drinking, thought fit to order circumcision there was no reason why we should now continue it, when every council house has its own bathroom

Leeches are now difficult to procure, but nothing is more dramatic than the relief they afford to a patient suffering from acute pericarditis or pleurisy Expectorant mixtures are used less often, most of them have been shown to have no therapeutic value, but because they were usually prescribed at a stage in an illness when nature was performing the functions attributed to them, they gained a fictitious reputation We hear little today of tuberculin in the treatment of active tuberculosis though at one time it was widely used Vaccines have fallen out of fashion for many conditions once treated by them, and I seem to remember that we used to give children large quantities of glucose for acidosis

One is on more dangerous ground in discussing remedies of today, but I sometimes wonder how much of the present day convulsive therapy will stand the test of time, and whether in striving to make labour painless we are not helping the mother at the expense of the child Vitamins are essential constituents of our diet and after a quarter of a century their importance has not been questioned, but I doubt whether it is wise to supplement what we eat with as many vitamin preparations as we are urged to do by present day advertising I was shocked when I was medical officer to a school of 100 boys, to find one term that no less than 75 of them had brought back some form of vitamin preparation to supplement their diet, the school was fed entirely on home-killed meat and fresh vegetables grown on the estate

* * *

In the future there may be changes in the medical curriculum, but medical teaching must always rest on the solid foundation of anatomy, physiology and pathology Later the student will learn about clinical laboratory methods and such aids to diagnosis as radiology and cardiography, but they should never be allowed to usurp the place of clinical observation I would also plead for a greater insistence than is observed in some medical schools on attendance in the post-mortem room, especially at autopsies on people who have died from the common conditions the student meets daily, he will then be able to note the changes due to advancing years and how they handicap treatment

Soon there will be changes in the profession that will affect the practitioner to a degree he hardly yet realises He should consider this matter deeply and voice his opinion, or he may find he is a mere cog in a mechanised profession Rehabilitation centres are doing a great deal for our soldiers at the present time, it is inconceivable that they should be allowed to wane after the p for they can play a great part in the future of convalescent homes At a rehabilitation centr man comes to realise that even if he has broken string of his fiddle, he still has three left on which to a tune One of the most important changes needed i profession is machinery to enable the practitioner to in touch with modern opinion and modern practi diagnosis and treatment

Many practitioners are men of outstanding ability knowledge but there is a substratum to whom mo ideas filter slowly Most of these have a busy practi possibly too busy—and feel that any spare time is t for recreation rather than for reading They ha working knowledge of what they are likely to mee the course of a day's work, and sufficient ability to t it according to their standards, and they trust to th carry them through their difficulties A short time I met a man who had had the misfortune to lose a pat under an anæsthetic, from ether convulsions The drug that might have saved the boy was withheld in s of all that has appeared on this subject in the med journals in the last two years Then I have been surpr to find how many people who die from coronary ar disease have been treated by alkaline mixtures on assumption that their pain was due to some gas condition, and even with liniment for the "rheumatis in their left shoulder Most men feel they have no t to wade through a large textbook, but a well-cho modern book on such a subject as heart failure can fail to widen their ideas and add an interest to their w Some men obtain a nodding acquaintance with new dr from the brochures, often meritorious, of manufactu chemists, but drawbacks are associated with a knowle based on information sent out by the manufactu firms for the sole purpose of selling their goods other day I asked a doctor if he was using much sulp pyridine in his practice "Oh, yes," he said, pullin large tin of tablets out of his pocket and shaking it, give it to everybody who has a temperature If, improves I go on with it, but if nothing happens I s it Wonderful stuff Saves lots of time " Later in day I put the same question to another man "N he replied, "I have not used any of those drugs yet think they may be rather dangerous, and I don't wan death from agranulocytosis on my hands " Consider how valuable and how potent the sulphonamides a it is significant to note how casually they are someti prescribed or ignored

The main body of the medical profession is like a la army fighting with little or no contact with its he quarters Any drastic change requires much thoug for generally Englishmen work best individually C trol should be elastic, not hampered by the rigid rout imposed by an office clerk or by a multiplicity of for but free to adapt itself to special circumstances so tha will be supported by the full cooperation of those work under it

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Infectious Disease in England and Wales

WEEK ENDED OCT 24

Notifications —The following cases of infectious dise were notified during the week *smallpox*, 0, scar fever, 2619, whooping-cough, 984, diphtheria, 97 paratyphoid, 7, typhoid, 12, measles (exclud rubella), 6803, pneumonia (primary or influenzal), 65 puerperal pyrexia, 162, cerebrospinal fever, 66, pol myelitis, 25, polio-encephalitis, 2, encephalitis leth gica, 2, dysentery, 177, ophthalmia neonatorum, No case of cholera, plague, or typhus fever was notifi during the week

Deaths —In 126 great towns there were no deat from enteric fever, 1 (0) from scarlet fever, 7 (0) fr measles, 6 (0) from whooping-cough, 21 (0) from dip theria, 48 (2) from diarrhœa and enteritis under t years, and 18 (1) from influenza The figures parentheses are those for London itself

Liverpool had 3 deaths from diphtheria Manchester reporte fatal cases of diarrhœa

The number of stillbirths notified during the week w 188 (corresponding to a rate of 31 per thousand tot births), including 17 in London

JUVENILE RHEUMATISM ITS PROBLEMS*

REGINALD MILLER, M D LOND, F R C P
SENIOR PHYSICIAN TO ST MARY'S HOSPITAL, PADDINGTON

THE whole clinical aspect of the rheumatic state in childhood and early life was for the first time brought into correct focus by W B Cheadle in his Harveian lectures for 1888, and with such accuracy that only comparatively minor readjustments have since been required Endocarditis, pericarditis, pleurisy, tonsillitis, exudative erythema, chorea and subcutaneous nodules were described as seven phases of the disease which, together with arthritis, formed the rheumatic series Cheadle expressed no personal views on causation After mentioning infection as a possible explanation of the rheumatism of childhood he was content vaguely to allude to " the rheumatic poison, or whatever the morbid influence may be," and in this he doubtless merely reflected the unsettled views of those days In 1900 these lectures, revised with the assistance of F J. Poynton, were republished The original text was reproduced almost without alteration but a description of rheumatic myocarditis, which by then had been studied by D B Lees and Poynton, was added and a more sympathetic allusion to the infective hypothesis of causation With the turn of the century the study of juvenile rheumatism became concerned particularly with bacteriology and carditis Its bacteriology was chiefly associated with the names of Poynton and A Paine, and the study of carditis with the name of C F Coombs The bacteriological problem seemed to be simple at the start but proved to be, and remains, complex and difficult With some modification in nomenclature the views of Poynton and Paine survived a deplorably fierce controversy in this country and made progress in the calmer atmosphere of America, but with the passage of time they have become once again a permissible subject for discussion here under the neutral formula of " the streptococcal hypothesis " Coombs in 1924 published the first monograph on rheumatic carditis In this he elaborated independently the work of Aschoff, and his results not only strongly supported an infective origin for the disease but showed that the histopathological changes—the tissue-reactions to the infecting agent—were peculiar to this disease

Juvenile rheumatism has thus come to be regarded as a generalised infection producing a definite clinical picture associated with special pathological features , and in spite of a lack of agreement on the exact type of infecting agent, this conception of the disease has been sufficiently widely accepted to form the basis of further research

The third and present phase of study is chiefly concerned with the disease as a problem in public health Such a development was overdue It seemed as though the bacteriological controversy had frightened workers in this country off the subject, and juvenile rheumatism had become accepted as unavoidable , but the appeals of Poynton and other enthusiasts for special help in dealing with rheumatic heart disease in children, and the beginning of preventive work in America, gradually prepared medical opinion here for organised efforts At the annual meeting of the British Medical Association in 1923, the medical section asked for a committee of investigation to consider rheumatic heart disease The first report of this committee, published in 1926, dealt with causation, the second report with prevention and control In 1927 the Medical Research Council published a report on social conditions and acute rheumatism, and in the same year the Ministry of Health reported on acute rheumatism in children in its relation to heart disease These may be taken as the starting-point of an organised effort to prevent and control juvenile rheumatism in this country

The term juvenile rheumatism came first into use when acute rheumatism in children under sixteen years of age was made a notifiable disease in Paddington on March 1, 1927

Clinical Problems

The clinical picture of juvenile rheumatism is now completely drawn, and will need little modification when the bacteriological problem has been finally solved I shall not describe here the manifestations of the disease, but will discuss their significance in the general scheme of the infection

Tonsillitis —That an attack of acute rheumatism was commonly ushered in by tonsillitis was well recognised by Cheadle who regarded the tonsillitis as a manifestation of the disease This is true but not the whole truth If the streptococcus associated with the production of acute rheumatism is to be regarded, as seems likely, as a normal inhabitant of the alimentary tract, what factor enables it to undertake a rôle of " parvenu pathogenicity " as Coombs called it [2] On the other hand, a tonsillitis which seemingly belongs to a different infective disease may also be followed by rheumatism the sequence of acute rheumatism after scarlet fever has long been recognised, and more recently attention has been called to the same effect of the tonsillitis of epidemic influenzal catarrhs in wards full of rheumatic children Yet we cannot regard rheumatism itself as a result of infection by streptococci commonly classed as hæmolytic, nor is the suggestion that the disease in children is ordinarily set up by case-to-case infection in agreement with clinical tradition A further point, discussed of late years, is the interval of time which often elapses between the initial sore-throat and the acute attack of rheumatism. The regularity of this " silent period," as Bernard Schlesinger has called it, has perhaps been overemphasised, but it is certainly common that in the development of juvenile rheumatism there is first a period of some months with recurring mild sore-throat and rheumatic symptoms, then an attack of acute tonsillitis, and finally, within 3–21 days, the full-blown acute rheumatic attack Whether this sequence indicates that allergy is important in the production of the acute phases of the disease has been much discussed

From the practical point of view, the throat seems to serve as the chief portal of entry for the infecting agent to the blood-stream The importance of acute or chronic tonsillar infection is therefore great, and it is noteworthy that in tonsillectomised children first or early attacks of rheumatism tend to be relatively mild, limited largely to chorea without carditis

Carditis —It is agreed that carditis is especially prone to develop in the rheumatism of childhood, following the rule that in children, more than in adults, infections tend to become generalised It is further agreed that the carditis of juvenile rheumatism is primarily responsible for the many deaths from heart disease in early middle age among the parents of young families—the peculiar tragedy of this disease But it is not always recognised that the incidence of carditis depends not only on the frequency but on the virulence of the infection Efforts to control juvenile rheumatism should not be criticised merely on the ground that they fail to prevent rheumatism the essence of the matter is whether the disease has been so modified that the incidence of cardiac lesions is relatively light It is on this point, for example, that the argument in favour of the removal of infected tonsils in rheumatic children is based

Chorea —Cheadle regarded rheumatism as by far the commonest cause of chorea, but hesitated to pronounce it an essential factor in the production of that disorder Later laborious statistical investigations showed that rheumatism could be recognised in such a large proportion of cases of chorea, before, during and after an attack, that the small margin left was no greater than could be accounted for by instances of rheumatic infection in which chorea existed as the sole manifestation Of late, however, some authorities in America have expressed the opinion that chorea by itself is not to be regarded as proof of rheumatic infection in a child The increase in the apparently non-rheumatic cases of chorea is possibly due to modified severity of the infection The high proportion of uncomplicated chorea in tonsillectomised children has already been mentioned , and it has always been agreed, as Coombs pointed out, that in some children chorea is produced by a smaller dose of rheumatic infection than any other manifestation of the disease To recede from the established pan-rheumatic view of chorea seems regrettable, since it brings a risk of possible misinterpretation of an early symptom of juvenile rheumatism

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* The Lumleian lectures for 1942 not delivered owing to the war

University of Glasgow

On Oct 24 the following degrees were conferred

MB Ch B—Douglas Jamieson (with honours), N R Grist, Zoë M Mackie, L H Holroyd, Edith E Little, Mary S W McCallum and Jean A Gibson (with commendation), Jane E Allan, W M Allan, Andrew Anderson F A Ayles, J T Baird, Agnes D Barr, James Beattie, G A Bell, J C Beveridge, W H Black, T A S Boyd David Brash, Annie C Brown, J K Brown, W M Brown, A S Browne A H Bruce, J T S Buchan, R A Burnett, A A Clark, David Clark G L Clark, John Colquhoun, W M Connell, A H Cook, N R Cowan, Robert Dickie, Mary C Fee Margaret S Ferguson, R S Ferguson, W G Ferguson, O A Finn, C R Forrest, Arthur Foster O C Fowler, Andrew Fraser, Conrad Freed, Thomas Graham, T E Graham, Anne C Y Greig, Andrew Grierson, J M Hendry, R K Hinshalwood, Jean T Holland, Alexander Hughes, Thomas Jack, J R Kenyon, Mary M Kirkland Robert Lamb, Joan B Landsman, Lilian Links S K Livingston, D F McAlpine, Sarah Macaskill, A K McAuslan, J B McBean, J Dunlop McCardel H R F Macdonald J A Macfarlane, George McHugh, A B MacLean O D T MacLean, H I Maclean, J S McLintock John McMillan, Violet C I Macnab, Ian MacPhail, Joseph McSevich, W S Magowan, R G Main W G Manderson, Margaret H E Martyn, Marjory B Miller, J G Muir W J Murphy, Camming Naysmith A S Nicolson, C B Noble, Ellen O Hagan, Francis O'Reilly T M Paterson, Helen B Phillips, Marie H I Reid, A M Robertson E M Robertson, J A M Robertson Constance A O Ross J S Scobbie, J K Scott, G B Shaw, Nathan Shieff, R W Simpson John Smith, A M Stevenson, G T Stewart, M L Thomson, R M Thomson Andrew Tomney, E W N Trounson Barbara C Tulloch, A K Turnbull, R R Waddell, Alison C Wallace, J M Wallace, W S Wallace, R G Whitelaw, M M Whittet, A H L Wilson I R Wilson, W S Wilson, A P Wright, H B Young, I S Young and Stuart Young

Scottish Conjoint Board

At recent examinations of the board of the Royal Colleges of Physicians and Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow the following were successful

LRCP & SE, LRFP & S

R W Adam J F Allan H A Anderson, A G Annan S W Bowden, W H N Calwell William Candib Yoanis N Caravannopoulos T A Christie, J F Couch, G L K Crampton, D V Curran G H Curtain, D B Donaldson, M A A El Gayar, D M Forsyth, Israel Gitlitz I G Graber Y H Karara Abraham Klar, Kathleen M McCusker Malcolm Macintyre, A F McInnes Amy Mooney, A S Neilson, O M Neshamkin D J M D Roper, A R G Salem W J H Sayers, A H M Shouman, J A Sinclair, B M Singh A W Smith, Benjamin Solomon, W J Stevenson, G H Vawda and Roderick Williams

Royal College of Surgeons of Edinburgh

At a meeting of the college on Oct 21 the following office bearers were elected for the coming year president, Mr. J W Struthers, vice president, Dr H M Traquair, secretary and treasurer, Mr K Paterson Brown, members of the president's council, Mr James Graham, Prof R W Johnstone, Sir John Fraser, Mr A Pirie Watson, Dr G Ewart Martin and Mr Francis E Jardine, representative on the General Medical Council, Mr Alex Miles, convener of museum committee, Mr W Quarry Wood, and librarian, Dr Douglas Guthrie

Paper Economy Committee

The Minister of Production has appointed a paper economy committee to help him to reduce the consumption of paper The committee will be concerned with the economic use of paper and not with the collection of waste paper, and will examine all cases of excessive use of paper and take steps to effect economy Further economy is essential, and the Minister is satisfied that it can be obtained He asks paper users to give the committee all the help in their power. The committee's address is 3, Central Buildings, Westminster, S W 1.

Medical Honours

The MBE has been awarded to Mr D O Clark, medical officer of a mobile unit in the civil defence casualty service at Weston super-Mare

The following awards have been made in recognition of gallant and distinguished services in Burma between last December and May.

CBE—Brigadier (T.) T. O Thompson, DM OXFD late RAMC.

OBE—Lieut Colonel Frank Oppenheimer, MB MANC, IMS.

DSO—Colonel (T) G E. MacAlevey, MC, MRCS, RAMC Captain C W. Elphick, MB DURH RAMC

MC—Captain Hugh O Hara, LRCPE RAMC

Medical Casualties

The following casualties have been announced

Missing presumed killed—Surgeon Lieut Commander Maurice Cay, MB EDIN, RN

Wounded—A/Lieut Colonel A W Gardner, MRCS, RAMC

Pharmaceutical Society of Great Britain

At Friends House, Euston Road, London, N W 1, on Thursday, Nov 12 at 2 30 PM, Prof J C Drummond, DSc, will address this society on nutrition.

Medical Insurance Agency

Sir Humphry Rolleston has resigned the chairmanship this agency which he has held since 1924 Sir R Hutchison has been appointed his successor

Royal Sanitary Institute

A sessional meeting of the institute will be held at mouth on Saturday, Nov 14, when Dr A G Shand will a paper on diphtheria immunisation with special reference the work of a mobile unit Dr J W Thornton will also speak on war time disinfestation Further information may be had from Dr A B Williamson, the hon. local secretary, Northern Secondary School, Mayfield Road, Portsmouth

Royal Society of Medicine

The section of psychiatry of this society will meet on Tuesday, Nov 10, at 2 30 PM to discuss neurosis in general practice during air raids The openers will be Dr J Whitby and Dr Russell Fraser At the same hour, at the section of therapeutics and pharmacology, Dr W F Young and Dr R A McCance will open a discussion on water metabolism in sick and healthy infants On Nov 13 at 2 30 PM at the section of ophthalmology Dr M Klein will read a paper on refraction and Mr A J B Goldsmith a paper on chiasmal arachnoiditis

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

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Appointments

CLARKE, ELIZABETH M R, MB NUI, DPH, FDD asst MO for Northumberland

LOUGHNANE, F MACG, FRCS temp hon asst surgeon to the genito urinary department of the Prince of Wales's General Hospital, Tottenham

LANGLEY G F, CH M BRIST, FRCS hon asst surgeon to the East Suffolk and Ipswich Hospital

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Births, Marriages and Deaths

BIRTHS

BURFIELD—On Oct. 18, at Musoma Tanganyika Territory, the wife of Dr. George Burfield, Colonial Medical Service—a daughter

BUTCHER—On Oct 24, at Lincoln, the wife of Dr H G H. Butcher—a son

COPLANS—On Oct 25 in London, the wife of Surgeon Lieutena Robert Coplans, RN—a son

FRAZER—On Oct 26, at Sutton, the wife of Surgeon Lieuten W Fitzgerald Frazer RNVR—a daughter

O'BRIEN—On Oct 25, in Dublin, the wife of Captain H D O'Brie RAMC—a daughter

OWEN—On Oct 24, at Eccleshall, Stafford, the wife of Dr Glynne Owen—a son

ROOKE—On Oct. 28 at Bournemouth, the wife of Lieutenant K. Rooke, RAMC—a daughter

WARING—On Oct 18, at Hitchin, the wife of Dr John Waring— daughter

WEDDERSPOON—On Oct 28 at Alverstoke the wife of Surge Lieutenant J M Wedderspoon, RNVR—a daughter

WILSON—On Oct 23, at Leicester, the wife of Mr William W Wilson, FRCSE—a daughter

MARRIAGES

ANDERSON—SINGLETON—On Oct 22, at Gillingham, Dorse Hugh Fraser Anderson, captain RAMC, to Nancy Singleto TANS

HATCH—JAMES—On Oct 24, at Peebles, Christopher Roger Hatc RAMC, to Berwyn Russell James, FANY

McKEAN—STONE—On Oct 24, at Ledbury, Carl William Fortesc McKean, MB to Lorna Mayo Stone

PARSONS—FLOOD—On Oct 28, at Oxford, Denis Shirley Parson BM, to Margaret Elizabeth Flood

RUTHERFORD—SANDERS—On Oct 23, at Newcastle on Tyn Robert James Rutherford, FRCSE, flight lieutenant RAFV to Elizabeth Howard Sanders, MB

VULLIAMY—GOULD—On Oct 31, at Sanderstead, Surrey, Dav Gibb Vulliamy, MB, to Daphne Isabel Gould

DEATHS

FAICHNIE—On Oct 30 at Bedford Gardens, London, W Frederic G Faichnie, MRCS, lieut-colonel RAMC, retd aged 72

FULLER GOOD—On Oct 27, James Fuller-Good MB, colonel IM retd.

LAMBERT—On Oct 27, at Lincoln, Frederick Samuel Lamber MRCS, lieut colonel RAMC (T), aged 78

LENNANE—On Oct 23, at Addiscombe, Alfred James Andre Lennane, MRCS, aged 78

MACKENZIE—On Oct 30, at Tiverton, Devon, Lewis Mackenzi FRCS, aged 93

MURRAY—On Oct 25, at Tunbridge Wells, Henry Walker Murra MB DUBL, retd colonel AMS, aged 88

SUMMERHAYES—On Oct 28, John Orlando Summerhayes DS MRCS, lieut colonel RAMC (T) retd, of Saxonholme, Newhave

Bacteriological Problems

In 1898 Poynton and Paine began to investigate the bacteriology of juvenile rheumatism In searching for the bacillus which Achalme in 1891 had claimed to be the causal agent of the disease, they found instead a minute diplococcus which grew artificially in chains and was apparently identical with one already being studied in the same connexion by Wassermann in Germany Poynton had been originally attracted to the study of juvenile rheumatism because of all the disorders then labelled as rheumatic this seemed to be the disease in its purest form ; and no doubt he expected its bacterial cause would be recognisable outside the body as proper to that disease in the language of those days a specific disease would be caused by a specific micro-organism In view of this it was natural that the peculiarities of the diplococcus (rather than its similarities to a streptococcus) should be emphasised, especially as it produced non-pyogenic lesions , and thus it became labelled *Micrococcus rheumaticus* Consequently when later bacteriologists reported that such an organism was not only hard to find but when found was in no way different from a *Streptococcus viridans*, its claims to be the causal agent of acute rheumatism were pronounced void

The first objection to it is, of course, fundamental , if the streptococcus is really found so seldom in connexion with acute rheumatism that it cannot be regarded as significant, then the cause of the disease remains unknown But after all these years it seems impossible to continue to adopt this attitude the same positive results have been obtained too often by too many investigators Streptococci have been obtained in cases of rheumatism during life and after death, and that they should even rarely be found in the cerebrospinal fluid in chorea, or in the interior of a subcutaneous node, is bound to impress the physician , and since the acute septicæmic phases are uncommon and transient, he is ready to regard one positive as outweighing many negative results It seems, therefore impossible to deny any association between acute rheumatism and streptococcal infection It follows that problems of identity, classification and specificity of the streptococcus are of subsidiary importance formidable as they are, they do not necessarily disprove the truth of the streptococcal hypothesis That the streptococcus of rheumatism cannot be morphologically distinguished from streptococci which are normally present in the alimentary tract presents no great difficulty The powerful influence of environment in predisposing to juvenile rheumatism, and the repeated relapses associated with fresh tonsillar infection, are in line with the possibility that the organism is a normal inhabitant of the body In spite of its clear-cut clinical features the disease does not suggest the fortuitous meeting of a child with some entirely foreign microbe A second difficulty is that the streptococcus isolated from a case of rheumatism cannot be distinguished from that obtained from endocarditis lenta, and that experimentally it will often set up endocarditis of the malignant type rather than of the simple rheumatic type This difficulty is not to be explained away on the basis of mistaken clinical diagnosis, but it may easily be within the capacity of the same micro-organism to set up either type of endocarditis Coombs held that the type of endocarditis depended not so much on the type of micro-organism as on the route by which the valve becomes infected "Possibly," he wrote in 1926, "the same streptococcus may excite at one time an acute rheumatic pancarditis, at another a slowly progressive endocarditis, invading the whole of the cardiac tissues by way of the coronary supply in the one, but attacking only the endocardial surface, which it has reached from the cardiac cavities, in the other " This contention, which serves well to bridge the difficulty, was the result of a long study of the histology of rheumatic carditis and of the embolic lesions of endocarditis lenta It deserves more consideration than it has received

The chief objection urged against the streptococcal hypothesis at present is concerned with the peculiar formative histological lesions found in rheumatism How do these conform to the idea of a streptococcal origin for the disease ? Coombs studied the histology of experimental rheumatism induced by the injection of streptococci grown from human rheumatism His conclusions, published in 1912, were to the effect that differences in the histological pictures in experimental and human rheumatism were not more than could be accounted for by the difference in the mode of production of the two conditions—the first being produced by a massive dose given all at once, and the second by a series of comparatively small doses He found that lesions of experimental rheumatism included "all the phenomena, even the submiliary nodule, found in the rheumatic lesions of man " In 1926 he briefly reaffirmed his belief In endocarditis lenta, Coombs found that, as in rheumatism, a reaction "predominantly formative" may be seen both in the infected valve and the embolic lesions of the disease He laid stress on this as contrary to the widespread impression that reactions to streptococcal infection must always be suppurative

Surveying the present position of the streptococcal hypothesis, the evidence that the streptococcus found in rheumatism is in causal connexion with the disease may be taken to be sufficient But this does not as yet provide us with a simple solution to what might be expected to be a simple problem some factor seems to be eluding us It has been suggested that a virus infection may be at work in association with the streptococcal infection, or indeed alone , but as yet the evidence in favour of any virus infection is far too meagre to be of weight, especially when the total lack of immunity conferred by rheumatic infection is borne in mind Again, a possible allergic factor has been much discussed, emphasis being laid on the silent period commonly observed between the initial tonsillitis and the acute systemic symptoms of rheumatism It is not easy to realise what part in the disease is claimed for allergy , it can hardly be regarded as predisposing to fresh invasions of the blood-stream, or as responsible for the pathological lesions of the disease But that is not to say that allergy plays no part in the production of rheumatic manifestations The allergic character of rheumatic erythema has been mentioned, but its peculiarities do not encourage the belief that allergy is an important factor in producing an acute attack of rheumatism On the other hand it still seems unlikely that a streptococcus which breeds so true in the medium of the human body should continue indefinitely to escape recognition by bacteriological methods, and it is to the perfection of these that we must look for the complete solution of the bacteriological problem Thus to accept the streptococcal hypothesis as true does not imply that it has yet been proved to express the whole truth, although there are not lacking signs that ultimately it will attain even to this position Three general considerations favour this hope . it has lived for over forty years (no inconsiderable life for even a scientific "fact") , not only is it without competitors but it has formed, and still forms, the basis of nearly all laboratory research on acute rheumatism , and the younger generation of physicians, unmindful of past controversies, accept without difficulty juvenile rheumatism as a streptococcal disease and allow this view to influence their treatment

Public-health Problems

In attempting to control widespread juvenile rheumatism in this country we have at least one important indication to follow up the class-incidence At the same time we must bear in mind the importance of tonsillar infection Can a relationship be established between this and the class-incidence of the disease ?

Class-incidence —Juvenile rheumatism is massed among the children of the poor and is limited to them to a peculiar degree—far more strictly than is, for instance, pulmonary tuberculosis However investigated, and it has been tested in various ways by many workers, this fact is always substantiated †, so that the social status of the child is a predisposing factor of predominant importance

The upper limit of the rheumatic stratum in children seems to coincide with, or to be slightly above, the social status of those attending the elementary day-schools , its lower limit is much more indefinite J Alison Glover has claimed it as a poverty disease in the strict sense,

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† Since this lecture was prepared J N Morris and R M. Titmuss (*Lancet* 1942 ii 59) substantiate this from an investigation of the social background of juvenile rheumatism based on a study of its morbidity and mortality

We may also look for evidence of chorea in cases of rheumatism rather than for rheumatism in cases of chorea. The dictum, attributed to Sir Thomas Barlow, that "all rheumatic children show chorea, only some more so" is strictly true. In the active phases of infection a subclinical or latent form of chorea is shown by general nervous and mental instability, with fidgetiness under observation, in the prodromal stages there is a tendency to such disorders as tics, night-terrors, enuresis and sleep-walking, and an impression has grown up that juvenile rheumatism is particularly prone to develop in nervous children. This is a difficult conception to any who regard the disease of infective origin, and it is probably more correct to regard the nervousness of the rheumatic child as a result rather than as a predisposing cause of his disease. On the other hand, should he acquire rheumatism, the inherently nervous child is more likely to develop chorea than any other manifestation of the infection.

Subcutaneous nodes.—The threefold clinical significance of these has long been established in their typical form they are diagnostic of rheumatic infection, they denote a severe grade of the disease, being extremely rare in the absence of heart infection and common in association with pericarditis, the course they follow forms a rough guide to changes in the diseased heart. The frequency of subcutaneous nodes is probably lessening, and perhaps, with improved control of the infection, their development is hardly of quite such grave import as it was. Occasionally nowadays a small crop of nodes may develop without any obvious exacerbation of the infection, and children will survive an attack of rheumatism in which scores of acute nodes have been present. The larger type of node which Cheadle regarded as "almost equivalent to a sentence of death" is now rare, but chronic nodes remaining for weeks and months are still seen, the ultimate outlook in both these types remains grave. Thus a rheumatic child showing nodes is suffering from a serious form of the infection and while they persist is in danger, immediate or ultimate.

Pleurisy and pneumonia.—Pneumonia in acute rheumatism, including the peculiar phenomenon described as the rheumatic lung by A. E. Naish, arises as a secondary result of congestion and compression of the lung by the enlarged heart. Pleurisy on the other hand may result as an extension of rheumatic pericarditis and thus be a truly rheumatic inflammation. Impressed by the fact that exposure to cold is an exciting factor in both pneumonia and rheumatism, Cheadle surmised that "probably many of the simple pleurisies and pleuropneumonias we see would be found, on careful inquiry, to be of rheumatic origin", but this has not become accepted.

Rashes.—Erythema nodosum and purpura rheumatica are not to be regarded as true rheumatic manifestations in spite of their frequent association with tonsillitis and quasi-arthritis as Cheadle termed it. This has been recognised for many years though it has been slow to pass into common knowledge. That they are outside the rheumatic picture is shown by the fact that they are hæmorrhagic lesions associated with a minimum of symptoms which can be counted as rheumatic, whereas in true rheumatism hæmorrhages occur only in the severest types. That both may at times be seen in association with true rheumatism is only to be expected, since tonsillar infection is common in all three conditions. Erythema marginatum, on the other hand, may certainly be accepted as essentially rheumatic and is of special interest now that the part played by allergy has come under discussion. Of all rheumatic manifestations it is the one which most closely resembles an allergic phenomenon, and the one of least clinical significance. It comes and goes at any time before, during or after an attack, and appears to have no obvious connexion with alterations in the activity of the infection. For what it is worth, this is an argument against the view that allergy plays an important part in the production of rheumatic lesions.

THERAPEUTIC PROBLEMS

The theory on which the use of salicylic-acid derivatives in acute rheumatism should be based has been the subject of interminable discussion. It is said that although in some phases of juvenile rheumatism salicylate appears to have a definite antirheumatic action, seemingly bactericidal, in other phases its results are too disappointing to allow of such an explanation. At one time some held that its use was actually dangerous, since it served only to mask without subduing the activity of the disease, and others attributed to it the albuminuria, anæmia and the mental and cardiac depression which are so commonly the effects of the disease itself. Probably most informed opinion would nowadays subscribe to R. Lightwood's description of its use as that of a hosepipe not quite long enough to extinguish the conflagration. Nevertheless in practice salicylate is widely accepted as an antirheumatic drug and is even used as a therapeutic test in diagnosis. As long as a discreet silence is maintained about the theory underlying its use it is employed by everyone without hesitation as an antirheumatic remedy.

Much of the difficulty arises from a failure to think out precisely what a specific antirheumatic remedy would be capable of accomplishing in juvenile rheumatism and what would be its limitations. Setting aside the tendency towards recrudescences and relapses, symptoms may be produced by acute inflammatory interstitial processes or by the persistent poisoning of the parenchyma of the organs, notably of the heart and probably of the brain. Evidently the effect of an antirheumatic remedy would be at a maximum in the first and at a minimum in the second set of symptoms. Is this not in line with what is observed in the salicylate treatment of rheumatic infection? In the acute febrile phases of the disease, whether in the tonsils, joints or heart, the drug acts as though it were controlling the activity of the infection the temperature falls, the local lesions subside and arthritis ceases to develop in fresh joints. That this satisfactory result is due to the drug seems confirmed by the frequency with which recrudescence follows its premature withdrawal. But in the more chronic cases, especially where the child is saturated with the poison of the disease and the muscle cells of the heart are degenerate, it is not to be expected that the antirheumatic action of any drug will produce much in the way of an immediate improvement. The action of salicylate is further handicapped by its irritant effect on the stomach, especially in cases already predisposed towards vomiting by the presence of severe cardiac dilatation. The sulphonamide derivatives fail to control the acute phases of rheumatic infection once established. This fact is of theoretical interest to those who accept the streptococcal causation of the disease.

Pathological Problems

The pathological changes in juvenile rheumatism are known, it is with their interpretation that we are here concerned. The pathology of the disease confirms the physician's view of it as a generalised infection. The signs discovered at autopsy—the pericarditis and endocarditis, pleurisy, periarthritis and synovitis, with perhaps nodes under the skin and in the pericardium—all suggest an infection by some agent disseminated through the blood-stream. After making every allowance for the peculiar nature of the disease process, there seems no valid argument against this straightforward explanation. The histological lesions have been regarded from the first as the tissue-reactions to the infecting agent of rheumatism, but owing to their difference from the changes found in other infections this explanation has been called in question. Yet no alternative seems acceptable, for wherever rheumatic lesions are found their peculiar histology is the same, whether we examine the macroscopic lesions which seem so patently the results of infection or the hidden changes in the myocardium. By what route are the valves infected? Are we still to be bound to the belief that, after some preliminary damage to the valve, the endocarditis is set up from the blood within the chambers of the heart rather than through the coronary circulation? The evidence supporting the first and older alternative is well known, though it has been weakened by recent experiments demonstrating the precise distribution of the coronary blood-supply, but it is not on the face of it a likely explanation, and the appearance of a mitral valve recently infected for the first time does not support it. A preferable presumption is that the valves, like the myocardium, are infected through the coronary circulation.

always rarer in children than adults, has now virtually disappeared at any age; pericarditis which in 1880 was found in about 13% of inpatients with acute rheumatism had decreased to 5% by 1914, and is no doubt considerably less common now, subcutaneous nodes, so closely associated with pericarditis, seem also to be less in evidence than they were 30 years ago. If the disease is steadily diminishing in severity it almost necessarily must be diminishing to some extent in frequency. These encouraging results may be attributed to improved social conditions, a better appreciation of the clinical aspects of the disease, and the routine use of the salicylic-acid derivatives. Again, the infection shows a distinct prodromal stage, it is rare for an attack of serious rheumatism to develop suddenly in a child—in most instances the catastrophe has been preceded by months of rather indefinite ill health with sore throats, muscular pains and symptoms of nervous instability the significance of which has been overlooked or misinterpreted. Removal of tonsils, too, assists our efforts to control juvenile rheumatism and its more serious results. Better supervision could be ensured by notification, attention to housing details, special facilities for school attendance, treatment of infected tonsils, establishment of rheumatism supervisory centres, and provision of special beds in heart homes or hospital-schools.

Rheumatism in children under the age of 16 was first made notifiable in the borough of Paddington in 1927, and has since been adopted in a few other localities. Worked in conjunction with some special scheme for the supervision of rheumatic children it is of value; but it fails to provide a complete return of all cases of rheumatic heart disease in the district because only acute phases of the infection can legally be made notifiable. The assistance of a sympathetic medical officer of health is in practice of more value than the notification of the disease. School arrangements for rheumatic children may need modification, the necessity for irregular attendance or even, as a temporary measure, for half-day attendance may be represented to the authorities, and experience shows that it is usually sympathetically considered. No doubt it is the wish of all concerned that attendance at school should do good rather than harm. On an altogether different footing comes attendance at the special day-schools for physically defective children. These "PD schools" are of the greatest value to rheumatic children. Those attending them are driven to school and back, they are rested and fed during their school-hours, and their whole regime is beneficial and free of the dangers of attendance at ordinary elementary schools. Open-air special schools are as a rule unsuitable for rheumatic children.

The closeness of the relationship between tonsillar infection and juvenile rheumatism in all its phases can hardly be over-emphasised. The figures obtained at the Paddington Green Children's Hospital demonstrated that 89% of rheumatic children showed infected tonsils, and that the chance of spontaneous cure was well under 5%, and limited to such cases as had shown no more than a single attack of acute tonsillitis. Thus the call for the removal of diseased tonsils can hardly be questioned on theoretical grounds. In practice the value of this procedure is shown not so much by the prevention of further attacks of rheumatism as by the modified severity of the infection, so that danger to the heart is much reduced; indeed it may be claimed that it is exceptional for permanent heart disease to develop for the first time in a tonsillectomised child. Thus, in a series of children admitted for rheumatism to the Paddington Green Children's Hospital, all of whom showed infected tonsils, the incidences of chorea, arthritis and active carditis were 40%, 52% and 50%. In the same children readmitted for relapses of sufficient severity to need inpatient treatment, these figures for the same manifestations of rheumatism were 78%, 5% and 5%, that is to say, the relapses consisted largely of uncomplicated chorea. The same phenomenon is seen in the rheumatism of tonsillectomised children taken as a whole. That this is no mere chance is suggested by the fact that in children with completely healthy tonsils, uncomplicated chorea is the main symptom. In the well-known figures compiled in America comparing the illnesses of tonsillectomised children with those in children for whom tonsillectomy had been advised and refused, the most significant difference is the drop in the percentage of acquired heart disease in the tonsillectomised group. Lastly, the freedom from spontaneous tonsillitis enjoyed by tonsillectomised rheumatic children, and the smoothness and rapidity of their convalescence from acute attacks, suggest a significant modification of the infective process. Thus removal of diseased tonsils in juvenile rheumatism is both theoretically and practically a correct procedure. Operation should therefore be resorted to where the state of the heart permits, and expert assistance for this purpose should be at hand wherever the care and treatment of rheumatic children are undertaken. The success of operative treatment is, of course, likely to be greater in early than late stages of the disease.

Rheumatic children need more special supervision than is possible in an ordinary outpatient department, in particular they require repeated surveys to see that they are keeping well. Hence special rheumatism supervisory centres have been established to which the patients are summoned for periodic re-examination. To prevent heart disease it is essential to attract early cases of rheumatism to the supervisory centre, and the word "rheumatism" should therefore appear in the name of the centre. The public need teaching that rheumatism is the cause of heart disease in children, and to use the term "cardiac clinic," which conveys little to the minds of the poor, is to defeat the object of the scheme. The physician in charge must be content to supervise children in the earliest stage of rheumatism, the majority of whom show no evidence of established heart disease. The centre must be capable of dealing with every phase of juvenile rheumatism, from the removal of tonsils to the treatment of severe acute attacks, and it is therefore ideal for the centre to be a special department of a children's hospital. The first of these centres in London was opened in October, 1926, and in 1938 there were about 20 such clinics at work, many of them attached to metropolitan children's hospitals or under the management of the London County Council.

The centre receives patients from the wards and outpatient departments of the hospital for supervision during quiescent phases of the disease as well as from school medical officers, private practitioners and the medical officer of health. It reports complaints of housing conditions to the public health authorities, makes special arrangements for school attendance, issues instructions to parents on the care of their children, treats all phases of the disease and makes recommendations for lengthy inpatient treatment if required. The cost of such a centre is low, and it can be organised to deal with a large number of patients. Judging by 10 years' experience in charge of such a centre, the results obtained are satisfactory, and real deterioration in the cases under supervision is surprisingly rare.

Facilities for inpatient treatment, combined with education, in heart homes and hospital-schools for children with rheumatic heart disease have been provided both by charitable funds and by municipal hospitals for chronic cases, where these children can be suitably cared for in conjunction with long orthopædic cases. The cost of treatment on these lines is great so that only selected cases can be accepted, nevertheless valuable results are obtained. It might be hoped that lengthy treatment would not only improve the cardiac condition but help to establish immunity against further attacks on returning home. How far these hopes have been fulfilled is uncertain, but failures are not unknown. It does not seem that these special facilities can replace the work of ordinary hospitals nor of supervisory centres, but they are needed to deal with the more severe examples of juvenile rheumatism and to give them their best chance of improvement or recovery.

THE ARCHITECT AND THE HOSPITAL.—The Bristol and District Divisional Hospitals Council, in coöperation with the replanning advisory committee of the Bristol Incorporated Chamber of Commerce and Shipping, have arranged for Mr Charles Elcock, FRIBA, to give a lecture on the future of health and hospitals from an architect's point of view. The lecture will be held in the physics lecture theatre, Royal Fort, University of Bristol, on Friday, Nov. 27, at 2.30 PM.

increasing in frequency as the depths of poverty are approached, but investigations undertaken from the voluntary hospitals have invariably shown it to be more rife in the upper and middle classes of the poor than in the very poorest This point is not unimportant Were juvenile rheumatism strictly a poverty disease it might well be connected with all the concomitants of dire poverty without distinction but if, as seems to be the case, destitution, underfeeding, overcrowding and general squalor are not factors of predominating weight, we must look for some special predisposing factor compatible with comparative poverty to explain the peculiar class-incidence of the disease

Environment —The paramount importance of environment suggested by the class-incidence of juvenile rheumatism, is conclusively proved by the investigations undertaken for the Medical Research Council's report of 1927 These consisted of the examination of four poor-law residential schools filled with about 1800 children from the rheumatic stratum of the juvenile population Had these children continued to live in their own homes it is practically certain that 2–5% of them would have developed rheumatic heart disease by the time that they were due to leave school, yet the mere removal of them from their homes virtually abolished this danger, and over a period of years the incidence of rheumatism was found to be hardly greater than in the schools of the well-to-do

As the class-incidence shows, the experience of these residential schools is not to be attributed solely to an escape from destitution, and it is in itself sufficient to direct special attention to the housing and schooling of the children of the poorer classes Juvenile rheumatism is particularly a disease of industrial cities, as opposed to residential towns or rural areas, and it tends to be specially prevalent in low-lying districts in proximity to water-courses This latter point brings to mind the traditional association between rheumatism and damp, which is further supported by the geographical, climatic and seasonal incidence of acute rheumatism Probably its prevalence near rivers is more directly influenced by the condition of the house itself than that of the site, as is suggested by the freedom from rheumatism of certain well-known riverside public schools, but houses for the poor tend to be built on cheap and ill-drained sites, and although it is true that an architect can build a dry house on any damp site, this cannot be done cheaply Many slum areas consist of old but decently built houses which have only become damp through ill-usage and dilapidation, but the better-class poor among whom juvenile rheumatism is particularly rife for the most part live in small houses, looking comparatively respectable, but badly built without basements on cheap sites A large proportion of these are damp and cold, and cannot be kept otherwise without a consumption of fuel beyond the means of the tenants

To prove the influence of damp homes in predisposing to juvenile rheumatism is difficult, but it is known that the disease is particularly prevalent in families living in basements, and to a less degree in ground-floors of houses without basements Attempts have been made to compare the proportion of damp homes in rheumatic and non-rheumatic families Such an inquiry was made from the Rheumatism Supervisory Centre attached to the Paddington Green Children's Hospital In it only first attacks of rheumatism were investigated, the controls consisted of non-rheumatic families and not merely families containing a non-rheumatic child, and a strict standard of damp was taken, such as mildew in bedrooms With these precautions damp in the home was found to be nearly twice as frequent in the rheumatic (57 5%) as in the control series (30%) As there is no recognised standard of what constitutes "damp" in a house it is difficult to compare these results with those of other investigations undertaken in London, Glasgow, Birmingham, Bath and Bristol In none of these were the differences between the two sets of figures as great as those in Paddington, and in some they were regarded as statistically insignificant, yet it seems at least rationally significant that in every investigation the results pointed in the same direction

The same point may be also investigated by the construction of rheumatism maps in towns, but this method has as yet hardly yielded much definite information In Paddington the area which seems to be most infected far from being the poorest or most overcrowded in borough, but it lies between a canal and an und river

Considering the difficulty of the subject the ev that damp houses predispose to juvenile rheumatism is at least suggestive, and this view gains in attractiveness when it is borne in mind that some special factor in connexion with poverty is needed to explain the peculiar class-incidence of the disease, as has already been pointed out Further, it is arguable that the same housing factor affords an explanation of the relationship between tonsillar infection and the class-incidence of juvenile rheumatism It may well be that, compared with the overcrowded living-room of the slum dweller, the cold unaired rooms of the badly built houses of the better class poor are the more likely to predispose to tonsillar infection and juvenile rheumatism

Schooling —The attendance of the children of the poor at the elementary day-schools is under compulsion, and this bears hardly on the physically subnormal child, particularly on the rheumatic child whose attendance may need to be irregular Further, from the point of view of exposure to damp and cold, it is impossible to overlook the difference between the well-shod and well dressed children of the rich with facilities for changing and drying wet clothes at their day-schools, and the conditions obtaining in the poorer classes

Tonsillar infection —Chronic infection of the tonsils as a factor in the production of juvenile rheumatism is well recognised In the Paddington figures only 11% of rheumatic children showed normal tonsils

Heredity —It is questionable if hereditary predisposition plays the important part assigned to it by earlier writers The clearer recognition of environment as an important factor in the production of juvenile rheumatism tends to minimise the influence of heredity, and the experience of the poor-law residential schools shows that hereditary predisposition is in practice no bar to prevention of the disease

Other factors —Dietetic factors appear to play no important part in predisposing to juvenile rheumatism The influence of geographical factors, as shown by the world distribution of the disease, presents interesting problems on which further information is required They are, however, outside the scope of these lectures

PREVENTION AND CONTROL

Juvenile rheumatism is found among the children of the poor, attending elementary day-schools under compulsion, and showing chronic tonsillar infection The basic measures needed for prevention are sociological rather than medical to raise the standard of living of the poor in general, and to improve housing conditions in particular So far public opinion in regard to housing has hardly advanced beyond the idea of slum-clearance The Royal Institute of British Architects, whose assistance in this matter is gratefully acknowledged, published in 1929 a *Report on Damp Houses* which made depressing reading at a time when new houses for the poor were being built in such great numbers Investigating a series of damp houses of various types, all of which were less than ten years old, it was found that, excluding damp due to faults of maintenance, the damp was due to porosity or faulty construction of walls in 40 1%, and to absence of, or defects in, damp courses in 32 6% It was pointed out that "all codes of building by-laws, and the conditions on which certain relaxations of by-laws have been permitted, are alike in calling for an adequate damp course, consequently its absence in new buildings must imply failure to comply with this by-law, while defects arise from improper compliance or the use of damp course materials of inferior quality" The comment was passed that this state of things in new dwellings was surprising, and the Report recommended that "the erection of dwelling-houses should be subject to stricter technical supervision, whether by architects engaged to supervise the work or by properly qualified officers of Local Authorities"

Three considerations favour the prevention of juvenile rheumatism first, acute rheumatic infection has lessened materially in severity in the last 50 years, as the decrease in frequency of the three most serious manifestations of the disease shows Hyperpyrexia,

SUMMARY

The incidence of sulphonamide sensitisation may be minimised if (1) medication is restricted to 7 days or less whenever possible, (2) small doses are used initially for certain chronic infections associated with a chronic infective focus, (3) desensitisation is undertaken immediately if eighth day "allergic" sensitisation is encountered, and (4) exposure to sunlight is restricted during chemotherapy

The drug should be withheld if Werner's test indicates drug retention

In cases with photosensitisation recent work suggests that the drug may safely be continued if further exposure to sunlight is avoided

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ASCORBIC ACID IN MEALS AT BRITISH RESTAURANTS AND SCHOOL CANTEENS

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OVALTINE RESEARCH LABORATORIES

THE Hertfordshire County Council has been exceptionally active in the organisation of school canteens and British restaurants 'One of the centres opened on Sept 18, 1939, claims to be the first to cater for children from the evacuated areas Early in this year there were over 100 feeding centres extending to the schools of the more remote villages These communal meals are, therefore, playing an important part in the nutrition both of schoolchildren and the general population, and the adequacy of the meals is of practical importance This report deals with the amount of vitamin C provided

The investigations were made in three areas, the first includes centres A to F, the second centres G to M, and the third centres N to R Three periods were covered at centre A the meals were examined mainly during a time when vegetables were scarce, at centres B to M during an intermediate period, and at centres N to R when early green vegetables had become abundant (table I)

TABLE I—ASCORBIC ACID IN MEALS AT 18 FEEDING CENTRES

Centre	People served	Meals examined	Period	Ascorbic acid per meal (mg)		Garden
				Mean	Range	
A	Ch and ad	9	Feb 23–May 2	18 8	4 5–45	no
B	Ch	3	April 14–17	30 0	10 5–65 5	yes
C	Ch	3	April 14–17	16 0	9–21	yes
D	Ch	6	April 14–17 April 27–30	16 3	8–34 5	yes
E	Ch.	4	April 20–24	24 5	9–36	yes
F	Ch	4	April 20–24	8 0	3–11	yes
G	Ch	3	April 27–30	27 4	9 4–34 4	yes
H	Ch. and ad	3	April 27–30	9 35	5 3–15 6	no
I	Ch.	3	April 27–30	24 6	20 4–33 5	yes
J	Ch. and ad	3	April 27–30	13 6	9 3–16 0	no
K	Ch	3	April 27–30	15 6	4 95–31 4	yes
L	Ch	3	April 27–30	18 0	8 2–22 0	no
M	Ch and ad	3	April 27–30	9 3	5 1–13 6	no
N	Ch, junior	4	May 4–7	19 5*	18 2*–26 75	no
	Ch, senior	4	May 4–7	22 6*	21 8*–27 6	
O	Ch	3	May 4–6	72 3	65–81	yes
P	Ch, higher est	3	May 4–7	44 9	23 6–60	no
	Ch lower est	2	May 4–7	25 4	9 5–41 4	
Q	Ch and ad	3	May 4–7	55 0	28 3–73 7	no
R	Ad	3	May 4–7	42 2	33 2–59 2	no
A–F				18 4		
G–M				16 8		
N–R				41 0		

* The ascorbic acid in raw cabbage and beetroot, served on May 4, is not included in these estimates
Ch. = children, ad. = adults, est = estimate

TABLE II—ASCORBIC ACID IN VARIOUS VEGETABLES AND VEGETABLE DISHES

—	Meals at which served	Wt of helping (g)		Ascorbic acid mg per 100 g		Ascorbic acid mg per helping	
		Mean	Range	Mean	Range	Mean	Range
Potato	65	160	55 5–300	6 12	2 0–14	9 8	1 85–21 7
Greens	26	65 3	34–124	34	9–61	22 5	5 2–59 8
Carrot							
cooked	8	66 5	28–156	3 4	0 64–5 9	2 2	1 0–5 3
raw	3		24–36 5		7–32		4 5–13 3
Swede	7	105 4	41–186	9 2	7 4–18	9 7	4 0–14
Turnip	4		16–29		5 5–10		1 6–2 0
Parsnip	3		40 5–157		2 5–5 5		1 1–7 6
Leek	3		35–97 5		12 2–27		6–12 9
Beetroot	4		35–85		4–12		2 5–5
Beans							
black	1		82 7		6 9, 7 4		6 1, 5 7
haricot	1		121 5, 109		2 66, 2 87		3 2, 3 1
Pease pud	1		148 5, 145 6		16 6, 18 3		24 6, 26 6
Peas	1		46 0 37 0		6 9, 8 1		3 2, 3 0
Veg soup	5		162–258		under 1–3		2–6 2

METHODS

At centres A to F and N to R small weighed samples were put immediately into bottles containing a solution of metaphosphoric acid, or of metaphosphoric and trichloroacetic acids, and the ascorbic acid was estimated as soon as possible At centres G to M samples were placed in glass jars which were taken to the laboratory in a freezing mixture and then kept in a refrigerator until analysed The time elapsing between taking and analysis never exceeded 5 hours Estimations were made by the method described by Chappell (1940), with unimportant modifications The time elapsing between the end of cooking and the taking of the samples varied At centres A, B, C and E it was not more than a few minutes At F it was not more than 10 min On the first 3 days the samples at D were taken directly the food was cooked At centre K food was cooked in two instalments ready at mid day and 1 PM, two pairs of samples were taken, one pair immediately after the food was ready at midday and one after 30 min At centres G to J and L and M only one instalment was cooked and the vegetables were kept hot in pans until wanted Samples were taken at these centres at intervals up to 100 min after cooking was completed At centres N to R samples were taken up to 45 min after the first meals were served, but, as noted later, at centre Q this might be a considerable time after cooking was finished

FINDINGS

Potatoes were served at all meals except one, on a Monday, at centre A, here it was not possible to peel the potatoes for 600 people in the morning in time for cooking, and it was thought inadvisable to keep them peeled over the weekend Green vegetables were served more often as the season advanced, only twice in 9 meals at A, ten times in 41 meals at centres B to M, but fourteen times in 17 meals at centres N to R Raw carrot was served three times, at the school canteens C and M a raw vegetable dish containing raw greens was supplied regularly once a week At centre G salads were served on Fridays At school-centre P watercress was served once a week, when in season, in approximately 20 g portions, though it was useful when the supply of vegetables was uncertain, it must be remembered that 20 g will provide only about 12 mg of ascorbic acid

There were wide differences between the amounts of ascorbic acid found per 100 g in different samples of the same type of vegetable (table II), these differences were found between samples served at the same centre on different days—for example, 2 5 mg per 100 g of potatoes at centre F on April 20 and 6 mg on April 22 Duplicate samples were taken at 19 of the meals served in the group G to M The average difference between the amounts of ascorbic acid per 100 g of two samples of potatoes taken at the same meal was 33 4% of that in 100 g of the sample that contained the lower amount In seven instances this difference was under 10% and in four over 50% Similar differences were found between samples of other vegetables The number of samples of

SULPHONAMIDE SENSITISATION

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THE oral administration or local application of a sulphonamide compound may be attended by various manifestations of intolerance, which may be due to a direct toxic action of the drug or to some form of sensitisation The sensitisation phenomena are of several types Reactions are occasionally encountered early in treatment, sometimes possibly as a result of the liberation of toxins from some chronic infective focus and sometimes on account of an acquired "allergy" to sulphonamides from some previous administration of the compounds Many writers have reported photosensitisation during treatment, but the reaction most commonly seen is an "allergic" sensitisation which develops between the eighth and tenth day of medication and may persist for long periods unless the condition is recognised and controlled The incidence of this allergic sensitisation does not appear to be in any way associated with an allergic family history and depends more on the duration of chemotherapy than on the total dosage administered Salvin (1937) and others have reported positive patch tests, but this local reaction appears to be unreliable and is not always obtained

Immediate symptoms of intolerance are often experienced during the first 48 hours of treatment and may cause depression, headache, nausea and vomiting, they tend to become less troublesome as medication continues beyond the second day Serious toxic effects of the drugs on the hæmatopoietic system have mostly been reported after prolonged administration of the drugs with a total dosage of over 50 g The so-called "drug-resistance" sometimes caused by inadequate dosage may on other occasions result from some type of sensitisation

An immediate toxic effect is occasionally encountered at the beginning of treatment in certain chronic cases, thus an erythematous or maculo-papular rash may develop locally early in the sulphonamide treatment of a chronic abscess Barber (1941) has described early sensitisation of this type during the treatment of lupus erythematosus, the patients experienced severe nausea, vomiting and diarrhœa with considerable malaise and pyrexia, and some developed a generalised scarlatiniform eruption during the first 48 hours of administration The condition may possibly be the result of the liberation of toxins into the circulation from the therapeutic effect of the drug on some chronic infective focus The occurrence can be largely prevented by recognising the possibility of reaction in such cases and beginning sulphonamide medication with small doses and increasing to a more effective dose in the second or third day, this procedure is not justifiable, or necessary, in acute cases as it is likely to lead to drug resistance In this way, presumably, a flooding of the system with liberated toxins is prevented for therapeutic effects can thus be obtained without severe general reactions in this type of case

Light sensitivity, or photosensitivity, is not infrequent during sulphonamide therapy and it is now recognised that excessive exposure to sunlight should be avoided as far as possible during chemotherapy The condition occurs as an erythemato-vesicular eruption on the exposed parts of the body In my experience the rash usually appears during the first week of treatment and has often been associated with evidence of liver damage, in some cases there has been an excessive urobilinuria and a positive van den Bergh test and the drug has therefore been discontinued Park and Platts (1942) have recently reported cases of photosensitisation in which it has been possible to continue medication without ill effects if further exposure to sunlight is avoided, and some of their cases have received further treatment with sulphonamides later without developing evidence of light sensitivity, although exposure to sunlight was not restricted Newman and Sharlit (1937) reported cases of light sensitivity which relapsed on further exposure to sunlight even though no further sulphonamide was given

The most common sensitisation to sulphonamides is an allergic type of reaction which usually appears between the eighth and tenth days of treatment, but occasionally may not develop until the fourteenth day The condition resembles serum sensitivity both in the time of onset and in the type of reaction It may occur as "drug fever" with malaise and pyrexia, but this is not invariable, and there may or may not be a skin eruption, nausea and vomiting Various types of skin rash are seen (Erskine 1939a), these tend to be generalised and may be urticarial, morbilliform, scarlatiniform or rarely purpuric, an eruption resembling erythema nodosum is probably the most frequent type seen during medication with sulphathiazole Similar eruptions may appear at this time with evidence of drug retention and do not seem to be true sensitisation phenomena, it is important that the two conditions should be differentiated, for the sensitisation reactions clear much more rapidly on desensitisation by continued therapy and later complications can be prevented, whereas the type with drug retention call for cessation of chemotherapy to prevent an increase in symptoms and toxic effects Werner (1939) described a simple test to demonstrate sulphonamide excretion in the urine, and this test may be utilised to differentiate the two types of reaction occurring about the eighth day of sulphonamide treatment With "allergic" sensitisation sulphonamide excretion is normal, but with "drug retention" Werner's test shows reduced excretion by a negative or weakly positive test, and there is often albuminuria and sometimes well-marked urobilinuria

Werner's test—1 c cm of urine is diluted 10 times in a test-tube and a few drops of Werner's solution (3% *para* dimethylaminobenzaldehyde in 7% sulphuric acid) are added A flavine yellow colour develops immediately in the presence of sulphonamide An estimation of the efficiency of excretion can rapidly be obtained with a little experience of the test in the routine examination of urines from patients taking varying doses of sulphonamides Diminished excretion and probable drug retention results in negative or weakly positive tests, the latter showing a very pale yellow colour change on adding Werner's solution, as opposed to the strong flavine yellow colour obtained in normal excretions

When there is drug retention, sulphonamide treatment should be discontinued and elimination assisted with fluids by mouth and saline diuretics When the sulphonamide excretion is normal, administration should be continued with care in the same or reduced dosage for 48 hours with the object of desensitising the patient This continuation of therapy should only be attempted when the patient is under continued observation so that any exacerbation can be immediately controlled, and a blood-picture should be examined whenever possible in view of the remote possibility that a severe granulocytopenia may develop at this stage Continuation of the drug may be advisable in view of the desired therapeutic effect, but it is also of considerable importance to desensitise the patient whenever possible because of the extensive use of these drugs for so many common illnesses and the fact that a patient developing sensitivity of this type may remain allergic for a long period Sometimes the first tablet given months later may provoke an immediate return of the dermatitis with general symptoms and these reactions may occasionally be of an alarming nature I have previously reported a case (Erskine 1939b) in which one 0 5 g tablet of sulphapyridine given twelve months after the original sensitisation caused œdema of the larynx Delayed reactions have not been observed when desensitisation was undertaken at the time of the reaction

If chemotherapy is restricted, whenever possible, to a seven-day period the incidence of allergic sensitivity is considerably reduced and I have encountered but few cases since recognising this factor three years ago

Sensitivity is liable to develop with any of the sulphonamide drugs and there is little evidence that any particular compound is less likely to cause reactions The condition almost invariably appears between the eighth and tenth days of treatment and most cases appear to depend more on this time factor than on the total dose employed Very occasionally, delayed reactions appear up to 48 hours after chemotherapy has stopped, so that administration for more than six days makes allergic sensitivity a possibility *It is important* to recognise that absorption from local applications as well as oral or parenteral administration may lead to sensitisation phenomena the one centre (O) that had a garden supplied by far the most ascorbic acid, mainly owing to the large helpings of green vegetables As is shown by the example of schools E and F, the effect of the school garden on the supply of ascorbic acid depends largely on the type of vegetable grown

A further study was made by two of us (F W) and W W P) on 17 meals served at school canteens S, T, V, W and X and British restaurant U, all situated in towns The schools had no gardens

Special precautions were taken to ensure accurate estimation A normal portion of a separate vegetable or of a whole serving for one person was taken while the meal was being served This was cut up and well mixed on a plate with knife and fork and divided into four approximately equal portions, two of which were examined at an EMS laboratory at Watford and two at the Ovaltine Research Laboratories Each part was put in a weighed glass jar containing 20 ml of 25% metaphosphoric acid, prepared on the same day, and at once well mixed by shaking Samples were brought to the laboratories within one hour and the ascorbic acid estimated at once Special attention was paid to the accuracy of the estimation As experience showed that assays of ascorbic acid in foods may be too low owing to incomplete extraction, the solid was ground thrice with sand under metaphosphoric acid solution, the extract squeezed through muslin and the residue ground with further sand and metaphosphoric acid The resulting extract was made up to a known volume and clarified by centrifuging The results on coloured solutions were checked by the potentiometric method of Harris, Mapson and Wang (1942) The estimates at the two laboratories agreed well, for example the amounts of ascorbic acid found at the two laboratories in one meal were 26 6 and 27 4

The first of these estimates was made on May 13, the others on May 21 and during June and July The amounts of ascorbic acid found in potatoes up to the beginning of July were less than in the series A to R because of gradual loss of vitamin C in old potatoes on storage After the first week in July new potatoes became available and the average rose to nearly 12 mg per 100 g The amounts in green vegetables ranged from 19 to 53 mg per 100 g Differences between duplicate samples were similar to those found in the previous series The effect of keeping hot after cooking was studied at the canteen of an industrial firm At 11 30 AM the amounts of ascorbic acid in two servings, weighing 140 g, of mixed vegetables (potatoes, greens and carrots) were 18 6 and 21 6 mg per 100 g, mainly contained in the greens The amounts in samples weighing 140 g, taken at 1 30 PM when all servings had been distributed, were about one-third less—13 2 and 13 6 mg The vegetables had been kept on a hot plate at about 80° C

An attempt was made to check the estimates of the size of helpings by finding the total amount of vegetables used and the number of persons supplied The amounts of vegetables used per week in May at school S would supply each child with 320 g of potatoes, 172 g of greens and 57 g of carrots per week; actual helpings weighed were potatoes 108, 124, 118 g, greens 38 g At school T during a week in June the totals would supply each child with 150 g of potatoes and 62 g of greens per day, not allowing for waste; these are in fair agreement with the actual samples taken Greens were served on three out of five days of the week The largest difference between helpings of vegetables at the same meal was 31% The average helping of potatoes actually weighed (when these were weighed separately) was only 115 g, and the average total weight of vegetables in a serving 196 g The amount of ascorbic acid per meal ranged from 0 9 to 29 6 mg, and averaged 16 mg up to the end of June In July, when new potatoes and larger quantities of greens were available, the average amount rose to 48 mg, and ranged from 29 to 79 mg per meal As might be expected, the meals showed considerable seasonal variations in their vitamin-C content

DISCUSSION

In most cases little more ascorbic acid is taken during the day than is supplied in the dinners served at these canteens A small and doubtful amount is contained in milk and 1 mg or so may be obtained from meat and jam The meals should, therefore, meet the whole of the day's requirements Actually the average amount in the meals, served before vegetables were plentiful, was little over half the standard of 30 mg proposed by the technical commission of the League of Nations (1938) and regarded by Bacharach and Drummond (1940) as a marginal requirement If requirement of ascorbic acid is proportional to the body-weight, the dinners may be considered just to meet the requirements of schoolchildren during the transition period before green vegetables are plentiful, during the worst period the amounts supplied are not adequate for children This can hardly be regarded as satisfactory, but the amounts of ascorbic acid in meals supplied at these centres in Hertfordshire are no less than found at other school canteens and British restaurants, nor than amounts obtained at home In January, 1941, one of us kept a record of his diet, the average intake of ascorbic acid was 16 mg per day, in 1942 with more attention to the supply of green vegetables the average was well over 30 mg

Study of ways to avoid losses of ascorbic acid in cooking suggests that the supply of green vegetables is of considerably more importance than the method of cooking The difficulty is to get the green vegetables At centre A it was almost impossible to get any greens from March 16 to April 27 However, abundant supplies of savoys were ready in private gardens by April 3 and the garden of school E was supplying sprouting broccoli in abundance by April 20 The garden of school F was not so well used, it was supplying potatoes right up to April, although potatoes were cheap and abundant, but did not produce any of the early greens The British restaurants and schools in towns have to depend on market gardeners who as a rule grow vegetables more suitable for transport than sprouting broccoli savoy or kale

The supply of ascorbic acid could be increased by eating green vegetables raw This would, however, solve only one of the difficulties associated with vegetables The supply of vitamin A from animal sources is fixed at a low level by the rationing of butter, margarine and cheese, the control of the milk-supply during the winter months and the scarcity of eggs Requirements must be made up from the carotene of green vegetables and carrots The vitamin A values of the average helpings of green vegetables and carrots are only some 1300 and 6000 international units respectively The 13 servings of green vegetables and 13 servings of carrots in the 50 meals of series A to M spread out over 50 days would supply only about 1600 IU per day It would be no more, possibly less, if the vegetables were eaten raw The supply of green vegetables should therefore be increased in order to provide sufficient vitamin A

We wish to thank the County Education Officer for his encouragement of this investigation, Miss J Organ, Ph C, for carrying out many of the estimations, and the staffs of the school canteens and British restaurants for the help and information they provided

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MINISTRY OF HEALTH WINTER HEALTH CAMPAIGN —The Ministry of Health, with the coöperation of the Ministry of Information, is launching another winter health campaign, and will renew its attack on the careless cough and sneeze by persistent education on the dangers of droplet infection H. M Bateman has produced another set of four cartoons and has chosen for his backgrounds a cinema, a lift, a suburban train and a canteen. A special poster has been designed to stress how the war effort is hindered by the spread of colds and influenza in factory, workshop and office A flashlight photograph shows the germ spreading effects of an unguarded sneeze, while a panel points out that time lost every year through colds and influenza is the equivalent in production of 3500 tanks, 1000 bombers and 1,000,000 rifles potatoes examined was sufficient to justify comparison between the three groups The means agreed well group A to F, 5 7 , group G to M, 6 4 , group N to R, 6 13 These means are rather lower than those found by one of us earlier in the year at a hospital (7 6), at home (7 7) and in school canteens and British restaurants in London (6 7) , and definitely lower than the 8 mg found by Olliver (1940) This was probably because of the lateness of the season The average amounts found in other vegetables agree well with the figures found by others (e g , Olliver 1940, Mathews and Bacharach 1941, Harris and Olliver 1942) The lowest amount found in any green leafy vegetable was 9 mg per 100 g , this was a sample of thousand-headed kale, cut on a Friday and cooked on the following Monday The amounts in cooked carrots were, on the whole, below the average found by Olliver (1940) , this, again, may have been due to the fact that they had been kept for a long time after being lifted.

At centre A green vegetables were crammed into a string bag and placed in a volume of boiling water, little more than was needed to cover them, in a large boiler It might be expected that this method of cooking would favour destruction of ascorbic acid, since the vegetables in the middle must be heated up slowly Unfortunately the studies at this centre were made when green vegetables were scarce and only two samples were examined , but there was no evidence of excessive destruction of ascorbic acid in these two as they contained 10 5 and 38 mg per 100 g A further study will be made at this centre in summer At centre Q the method of cooking was similar, but a wire basket was used instead of a string bag Apart from this the vegetables at this centre were cooked in instalments from 10 AM onwards and kept in a hot cupboard at 65°–70° C until needed The batches put in last were taken out first, so that some batches were not served until over 3 hours after they had been put on to cook Nevertheless, the sample of green vegetables (kale and sprouting broccoli) taken at this centre contained 57, 17 5, 19, 37 6, 44 5 mg per 100 g It is possible that the extreme difference between samples taken on the same day may be due to the long keeping of the second sample

Nor was there any evidence that the destruction of ascorbic acid, in the samples of vegetables in group F to M, kept hot for a considerable time, was much greater than in samples taken shortly after cooking The mean value for the 14 samples of potatoes which had been kept hot, over a low gas or in an oven, for not less than 40 min after cooking was 6 6 mg per 100 g , while the mean for 25 samples kept for under 40 min was 6 3 Sprouting broccoli which had been kept hot (commonly on a hot plate with the temperature falling from about 100° C to about 65° C) for at least 100 min contained 14 5 and 15 5 mg per 100 g When small samples of vegetables are kept hot on a water bath the loss of ascorbic acid is fairly rapid, though variable , 40% may be lost in an hour Large samples in covered containers probably lose ascorbic acid less rapidly because oxygen diffuses into the substance more slowly

In most of the centres vegetables were cooked in dixies , the method did not differ from that used in domestic cooking except that it was on a larger scale In the smaller schools the dinners were all served within 15 min of the end of cooking Large amounts of ascorbic acid are extracted from vegetables by the water in which they are cooked , this is one of the chief causes of loss This loss could be reduced if a series of batches of vegetables were cooked in the same water (Macrae 1942) , and if cooking water were used for making soups and gravies the ascorbic acid extracted would not be lost to the consumers However, serial cooking would entail difficulties in centres where one batch of vegetables only is commonly cooked There are practical objections to the use of the cooking water, and it was rare to find that all of it was used

Most manageresses of communal feeding centres have been impressed with the belief that potatoes lose a large proportion of their ascorbic acid if they are peeled and kept in water overnight Two of us have tested this belief , one (J R M) found no evidence of loss even if the potatoes were cut in pieces, measuring about 5 by 3 by 3 cm , the other (G V J) found evidence of a slight loss and of a serious loss in one instance only (table III)

TABLE III—EFFECT OF PEELING, KEEPING AND COOKING ON THE ASCORBIC ACID CONTENT OF 6 SAMPLES OF POTATOES

Potatoes	Ascorbic acid (mg per 100 g)					
Raw	18 5	17 1				
After peeling	16 5	20 0	17 2	8 9	12 8	13 3
Peeled and kept overnight	16 0	18 0	13 4	8 3	10 2	13 4
Peeled, kept overnight and cooked	15 8	9 7*				

* Kept hot for 2 hr after cooking

TOTAL ASCORBIC ACID IN THE MEALS

In order to estimate the amount of ascorbic acid supplied by the meals it is necessary to know the size of the helpings This is not easy A fair estimate of the size of an average helping of potatoes can be calculated from the total amount supplied and the number served , 14% may be assumed to be wasted with the peel For example school E used 28 lb per day for 80 children, and school D 112 lb per week for 12 small and 25 big children and 4 adults The size of the average helping so calculated agreed with that found by weighing samples However, these were small schools where all the serving was done by one or two people , the whole process of serving could be watched and fair samples chosen for weighing Children's helpings varied with the age—for example, at centre N the average helping for juniors was 144 g and for seniors 270 g But there were wide variations not due to age between different centres , thus the average helping over 3 days at centre G which supplied children of all ages was 210 g , but it was only 75 6 g at centre H which supplied children of all ages and adults At the centres G to M, where two sample helpings were weighed at most of the meals, the average difference between the weights of two was 29% of the weight of the smaller , in 3 cases the difference was over 50% and in one it was 128% There were similar wide differences between the weights of helpings of other vegetables, both between duplicates taken at the same meals and between the helpings at different centres For example, at N the average helping of green vegetables was 34 g for juniors and 36 g for seniors , while at school D it was 123 g Occasionally helpings of carrots and parsnips were unexpectedly large The differences between the total amounts of ascorbic acid contained in the other vegetables of duplicate samples of meals at centres G to M were less than those between the weights of the duplicate samples of potatoes The mean difference was 17% and in no instance was it over 40% The mean total ascorbic acid in the members of each pair that contained the larger amount was 18 mg and the mean of the other members that contained the smaller amount was 15 5 mg At school N seniors got 75 mg in 3 days and juniors 70 mg

The most striking features is the difference between the series A to F and G to M on the one hand and the series N to R on the other This difference was due to the fact that green vegetables (mainly kale and sprouting broccoli) were served more often in the last series and that the amount of ascorbic acid in the greens served was larger A similar contrast can be drawn between schools E and F The average amount of ascorbic acid derived from a helping of potatoes was nearly 10 mg (table II) This may be regarded as a constant foundation of the day's supply of vitamin C A helping of green vegetables usually brings up the total to over 30 mg With good helpings of swedes or leeks or raw carrots the total is likely to be over 20 mg , but it is likely to be under 20 mg if any other cooked vegetable is used to supplement the potato This does not include vegetables—kohlrabi for example—which are not grown to any great extent Raw green vegetables are usually eaten in small amounts In the one meal included in this series at which they were served 21 g of raw chopped greens supplied 8 5 mg of ascorbic acid and 21 g of lettuce another 4 2 mg

Vegetables for the school canteens were obtained from local retailers, school gardens and (schools B and D) from the gardens of large houses in the neighbourhood In the series G to M the two schools that provided the most ascorbic acid per meal had gardens , In series N to R the one centre (O) that had a garden supplied by far the most ascorbic acid, mainly owing to the large helpings of green vegetables As is shown by the example of schools E and F, the effect of the school garden on the supply of ascorbic acid depends largely on the type of vegetable grown

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We wish to thank the County Education Officer for his encouragement of this investigation, Miss J Organ, Ph C, for carrying out many of the estimations, and the staffs of the school canteens and British restaurants for the help and information they provided

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MINISTRY OF HEALTH WINTER HEALTH CAMPAIGN—The Ministry of Health, with the coöperation of the Ministry of Information, is launching another winter health campaign, and will renew its attack on the careless cough and sneeze by persistent education on the dangers of droplet infection H. M Bateman has produced another set of four cartoons and has chosen for his backgrounds a cinema, a lift, a suburban train and a canteen. A special poster has been designed to stress how the war effort is hindered by the spread of colds and influenza in factory, workshop and office A flashlight photograph shows the germ spreading effects of an unguarded sneeze, while a panel points out that time lost every year through colds and influenza is the equivalent in production of 3500 tanks, 1000 bombers and 1,000,000 rifles potatoes examined was sufficient to justify comparison between the three groups The means agreed well group A to F, 5 7, group G to M, 6 4, group N to R, 6 13 These means are rather lower than those found by one of us earlier in the year at a hospital (7 6), at home (7 7) and in school canteens and British restaurants in London (6 7), and definitely lower than the 8 mg found by Olliver (1940) This was probably because of the lateness of the season The average amounts found in other vegetables agree well with the figures found by others (e g, Olliver 1940, Mathews and Bacharach 1941, Harris and Olliver 1942) The lowest amount found in any green leafy vegetable was 9 mg per 100 g, this was a sample of thousand-headed kale, cut on a Friday and cooked on the following Monday The amounts in cooked carrots were, on the whole, below the average found by Olliver (1940), this, again, may have been due to the fact that they had been kept for a long time after being lifted

At centre A green vegetables were crammed into a string bag and placed in a volume of boiling water, little more than was needed to cover them, in a large boiler It might be expected that this method of cooking would favour destruction of ascorbic acid, since the vegetables in the middle must be heated up slowly Unfortunately the studies at this centre were made when green vegetables were scarce and only two samples were examined, but there was no evidence of excessive destruction of ascorbic acid in these two as they contained 10 5 and 38 mg per 100 g A further study will be made at this centre in summer At centre Q the method of cooking was similar, but a wire basket was used instead of a string bag Apart from this the vegetables at this centre were cooked in instalments from 10 AM onwards and kept in a hot cupboard at 65°–70° C until needed The batches put in last were taken out first, so that some batches were not served until over 3 hours after they had been put on to cook Nevertheless, the sample of green vegetables (kale and sprouting broccoli) taken at this centre contained 57, 17 5, 19, 37 6, 44 5 mg per 100 g It is possible that the extreme difference between samples taken on the same day may be due to the long keeping of the second sample

Nor was there any evidence that the destruction of ascorbic acid, in the samples of vegetables in group F to M, kept hot for a considerable time, was much greater than in samples taken shortly after cooking The mean value for the 14 samples of potatoes which had been kept hot, over a low gas or in an oven, for not less than 40 min after cooking was 6 6 mg per 100 g, while the mean for 25 samples kept for under 40 min was 6 3 Sprouting broccoli which had been kept hot (commonly on a hot plate with the temperature falling from about 100° C to about 65° C) for at least 100 min contained 14 5 and 15 5 mg per 100 g' When small samples of vegetables are kept hot on a water bath the loss of ascorbic acid is fairly rapid, though variable, 40% may be lost in an hour Large samples in covered containers probably lose ascorbic acid less rapidly because oxygen diffuses into the substance more slowly

In most of the centres vegetables were cooked in dixies, the method did not differ from that used in domestic cooking except that it was on a larger scale In the smaller schools the dinners were all served within 15 min of the end of cooking Large amounts of ascorbic acid are extracted from vegetables by the water in which they are cooked, this is one of the chief causes of loss This loss could be reduced if a series of batches of vegetables were cooked in the same water (Macrae 1942), and if cooking water were used for making soups and gravies the ascorbic acid extracted would not be lost to the consumers However, serial cooking would entail difficulties in centres where one batch of vegetables only is commonly cooked There are practical objections to the use of the cooking water, and it was rare to find that all of it was used

Most manageresses of communal feeding centres have been impressed with the belief that potatoes lose a large proportion of their ascorbic acid if they are peeled and kept in water overnight Two of us have tested this belief, one (J R M) found no evidence of loss even if the potatoes were cut in pieces, measuring about 5 by 3 by 3 cm, the other (G V J) found evidence of a slight loss and of a serious loss in one instance only (table III)

TABLE III—EFFECT OF PEELING, KEEPING AND COOKING THE ASCORBIC ACID CONTENT OF 6 SAMPLES OF POTATOES

Potatoes	Ascorbic acid (mg per 100 g)					
Raw	18 5	17 1				
After peeling	16 5	20 0	17 2	8 9	12 8	13 3
Peeled and kept overnight	16 0	18 0	13 4	8 3	10 2	13 4
Peeled, kept overnight and cooked	15 8	9 7*				

* Kept hot for 2 hr after cooking

TOTAL ASCORBIC ACID IN THE MEALS

In order to estimate the amount of ascorbic acid supplied by the meals it is necessary to know the size of the helpings This is not easy A fair estimate of the size of an average helping of potatoes can be calculated from the total amount supplied and the number served, 14% may be assumed to be wasted with the peel For example school E used 28 lb per day for 80 children, and school D 112 lb per week for 12 small and 25 big children and 4 adults The size of the average helping so calculated agreed with that found by weighing samples However these were small schools where all the serving was done by one or two people, the whole process of serving could be watched and fair samples chosen for weighing Children's helpings varied with the age—for example at centre N the average helping for juniors was 144 g and for seniors 270 g But there were wide variations not due to age between different centres, thus the average helping over 3 days at centre G which supplied children of all ages was 210 g, but it was only 75 6 g at centre H which supplied children of all ages and adults At the centres G to M, where two sample helpings were weighed at most of the meals, the average difference between the weights of two was 29% of the weight of the smaller, in 3 cases the difference was over 50% and in one it was 128% There were similar wide differences between the weights of helpings of other vegetables, both between duplicates taken at the same meals and between the helpings at different centres For example, at N the average helping of green vegetables was 34 g for juniors and 36 g for seniors, while at school D it was 123 g Occasionally helpings of carrots and parsnips were unexpectedly large The differences between the total amounts of ascorbic acid contained in the other vegetables of duplicate samples of meals at centres G to M were less than those between the weights of the duplicate samples of potatoes The mean difference was 17% and in no instance was it over 40% The mean total ascorbic acid in the members of each pair that contained the larger amount was 18 mg and the mean of the other members that contained the smaller amount was 15 5 mg At school N seniors got 75 mg in 3 days and juniors 70 mg

The most striking features is the difference between the series A to F and G to M on the one hand and the series N to R on the other This difference was due to the fact that green vegetables (mainly kale and sprouting broccoli) were served more often in the last series and that the amount of ascorbic acid in the greens served was larger A similar contrast can be drawn between schools E and F The average amount of ascorbic acid derived from a helping of potatoes was nearly 10 mg (table II) This may be regarded as a constant foundation of the day's supply of vitamin C A helping of green vegetables usually brings up the total to over 30 mg With good helpings of swedes or leeks or raw carrots the total is likely to be over 20 mg, but it is likely to be under 20 mg if any other cooked vegetable is used to supplement the potato This does not include vegetables—kohlrabi for example—which are not grown to any great extent Raw green vegetables are usually eaten in small amounts In the one meal included in this series at which they were served 21 g of raw chopped greens supplied 8 5 mg of ascorbic acid and 21 g of lettuce another 4 2 mg

Vegetables for the school canteens were obtained from local retailers, school gardens and (schools B and D) from the gardens of large houses in the neighbourhood In the series G to M the two schools that provided the most ascorbic acid per meal had gardens, In series N to R duction of physiological salt solutions or blood was ective This action of potassium phosphate is seen n the absence of anatomical injury of the vegetative centre cells and while they still have capacity to When they are exhausted the drug has not this

This procedure is therefore indicated in all cases hock where there are signs of the weakening of pathetic tonus The best results are obtained when injection is not too long delayed, since after a time nervous centres become exhausted and cease to react

CONFIRMATION IN MAN

nese laboratory results were fully confirmed clinically on the battlefield The technique in man is to inject ne sixth molar solution (isotonic) of potassium sphate (a mixture of potassium hydrogen phosphate potassium dihydrogen phosphate giving a pH of in a quantity of 1–2 c cm directly into the cerebral tricles or cisterna magna

he patient must be in a horizontal position (prefer- y on his left side) with the head lower than the body bent on the chest, the lower limbs must be flexed external occipital protuberance and the first ncal spinous process are identified and the skin ween them shaved and disinfected A graduated ernal needle or an ordinary lumbar-puncture needle nserted exactly in the midline pointing towards the ernal auditory meatus and slid along the occipital e until the atlantoid membrane is perforated (with a king sound) This occurs at a depth of 4–5 cm, nslucent cerebrospinal fluid will escape from the dle after removal of the stylet Since in shocked ients the intracisternal pressure may often be low the ebrospinal fluid often does not flow spontaneously l has to be drawn out with a syringe After 1–2 c cm the cerebrospinal fluid has been withdrawn 1 c cm of solution of potassium phosphate which has been rmed to body temperature is injected with a syringe der such a pressure that it penetrates into the ven- les This method of treatment is simple and can be ily applied at the front The preparation of the tassium phosphate solution is not complicated, but st be done carefully the glass of the ampoules must neutral, the mixture of the monometallic and netallic potassium phosphate (concentration one-sixth lar) can be prepared either from these salts (K_2HPO_4 d KH_2PO_4) or by adding the ortho-phosphoric acid a solution of potassium hydroxide up to pH 7 6

As a rule the effects of this injection are noticed in 1–2 inutes or even sooner the blood-pressure rises and the piration becomes deeper The absence of these effects thin a few minutes is generally due to the fact that the id has not reached the ventricles as a result of the orrect direction of the needle or an insufficient pres- re In those cases one must repeat the operation

Other measures of proven worth in the treatment of ock must also of course be employed blood-trans- ion where this is necessary adequate fluids and utriment by mouth, alleviation of pain, and removal of verely injured tissues which may be a source of bstances harmful to the body, and a possible nidus for fection, besides in many cases causing direct leakage f plasma locally and resultant shock

SUMMARY

The main feature of the final stage of traumatic shock a considerable reduction in tonus of the sympathetic ervous system and a partial increase in that of the arasympathetic nervous system

The most effective means of combating shock in this inal stage is the raising of the tonus of sympathetic erve centres by the direct action on those centres of otassium ions

If potassium phosphate be introduced directly into the ateral ventricles or cisterna magna the potassium ions ill stimulate sympathetic nerve centres and the phosphate (reducing the concentration of ionised calcium) ill cause a depression of parasympathetic centre tone

This measure is indicated in traumatic shock in the hase of decreased sympathetic tonus that is at a omparatively late stage In no circumstances should it employed when there is evidence of sympathetic excita- ion, as sometimes happens in the first phase of shock

It is effective in man as well as in experimentally roduced animals In human cases it must be introduced into the lateral ventricle or cisterna magna to be effective, 1–2 c cm of a one-sixth molar solution of a mixture of potassium hydrogen phosphate and potassium dihydrogen phosphate, pH 7 6, is injected with the patient lying horizontally on the left side with the head at a lower level than the body

Other measures of combating shock, such as transfusion and alleviation of pain, should not be neglected

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TREATMENT OF PULMONARY TUBERCULOSIS BY LUNG PUNCTURE

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IN an article[1] five years ago I described my technique for the treatment of bone and lung tuberculosis by puncture of what I termed the nucleus of post-allergic focal infection, and I attempted to explain the satisfactory results obtained by suggesting that puncture liberated into the circulation antibodies which had hitherto been confined in the nucleus I was then able to report a favourable reaction to this treatment in 76–80% of about 450 bone cases and in a similar percentage of 200 lung cases I have since extended my series of cases to over a thousand

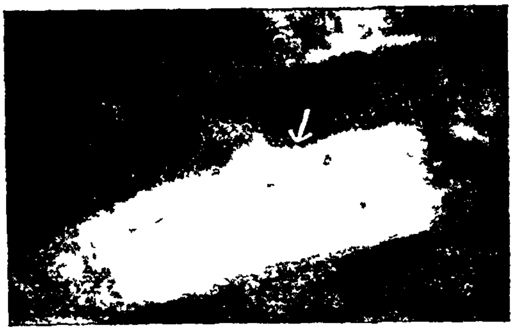

Fig 1—Radiogram showing nucleus (arrow) in second right intercostal space

The nucleus in the lung has been carefully studied by stereoscopic X rays, and has been found to be generally similar to the lesion in bone which I described[2] in 1931 It is sometimes star-shaped and sometimes like a wheel of which the spokes are made up of small lines or dots and the rim is a more or less continuous line or a ring of round dots each about the size of a pin's head The nucleus can often be seen in the ordinary X-ray film, but a series of stereoscopic films may have to be taken before it is identified The shadows, particularly the star-shaped ones are apt to be blurred because of the relatively long exposure used in chest radiography We are aiming at exposures of 1/100 sec in order to eliminate the effects of movement of the lung tissue In the chest radiogram the nucleus appears as a circle about 1 cm in diameter (figs 1 and 2) but it is probably actually a good deal larger The exudative components of the tuberculous process give it a blurred outline, and it is only when definite fibrous tissue has been formed that a clear impression of lines or spots is obtained

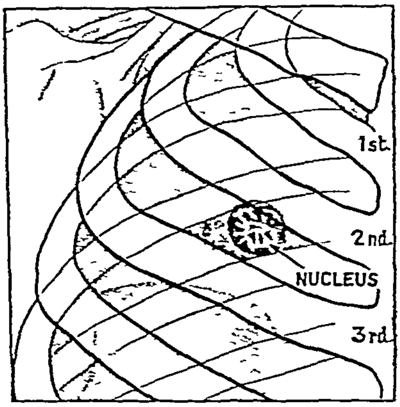

Fig 2—Sketch of radiogram of upper part of right lung to show position and appearance (exaggerated) of nucleus

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[1] *Lancet*, 1937, ii 1299 [2] *Sem med B Aires*, 1931 i, 1743

SHOCK

TREATMENT BY DIRECT ACTION ON VEGETATIVE NERVE CENTRES

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THE concept of shock is still inadequately defined despite much writing and many observations on pathogenesis and treatment obtained in the laboratory, in the hospital and on the battlefield The existing differences of opinion are in part explained by the fact that the definitions are based on observations made during different phases of shock It is generally agreed that traumatic shock shows two main phases (1) an initial reflex phase following quickly after the injury and irrespective of the amount of blood loss , and (2) secondary shock setting in a few hours after the injury, manifest in weakness, pallor, fall in blood-pressure and a consequent fall in temperature This last phase is similar in many ways to collapse as seen, for example, in typhoid, pneumonia and diphtheria, and is characterised primarily by circulatory insufficiency *An important factor in this derangement of hæmodynamics* is thought to be reduction of blood-volume due to accumulation of blood in the so-called blood depots (liver, kidneys, spleen, and, as emphasised recently, skeletal musculature), plasmorrhœa, leading to reduction in volume of the plasma by leakage through the damaged capillary walls , and actual loss of blood When the loss of blood does not exceed 25% of the total blood-volume, blood-pressure is maintained at a normal level by means of vessel constriction This reduction in blood-volume is compensated by absorption of fluid from the tissue spaces After a few hours hæmodilution is often observed This compensatory process may however prove inadequate if dehydration is present Continued decrease of the volume of circulating blood will finally bring about an abrupt fall in blood-pressure despite vessel constriction The resultant reduction in blood-supply to the tissues, with impaired nutrition and oxygenation, will lead to damage and increased permeability of the capillaries This in turn will permit leakage of plasma through the capillary walls and the development of œdema The diminished plasma volume means an increase in viscosity, and circulation is impeded At this late stage blood-transfusion is of little value since the plasma is not retained in the vessels The diagnosis of shock although difficult to make in the initial stages, later becomes an obvious one from the characteristic symptoms of circulatory insufficiency At this stage the blood-pressure is maintained mainly by constriction of the vessels, and the slightest disturbance—for instance, anæsthesia or a further small loss of blood or plasma—is sufficient to cause a rapid fall in blood-pressure

Experiments made with our colleagues, Rosin and Chvoles, have proved that sensitivity, especially to pain, plays an important part in the development of shock This work showed that irritation of the skin by an induction current for 2–6 hours causes shock, whereas when the skin is previously anæsthetised with procaine much longer electrical stimulation produces no effect Given the same conditions, shock is most easily produced by irritation of the skin on the inner surface of the thigh and of the peritoneum and periosteum, whereas irritation of the dura even for as long as 8–12 hours does not cause shock The rhythm of irritation plays an important part, shock usually appearing much more quickly when the rhythm is quicker The criteria of shock in all these experiments were (1) sudden and maintained fall of blood-pressure with a rapid and feeble pulse, (2) shallow breathing, (3) the absence of reaction to irritation, and (4) lowering of the temperature All these point to a disturbance of the vegetative nervous system

The important rôle played by preceding conditions in the development of clinical shock in man has been demonstrated by clinical observation Excessive tiredness, prolonged insomnia, insufficient nourishment, fear, exposure, loss of blood, and, not least, painful irritation, lead after a transitory and relatively short phase of sympathetic over-stimulation to one of exhaustion and contribute in this way to the development of shock

The results of these experiments show that caused, apart from loss of blood, by a whole circumstances, each of which affects the condition nerve centres Only when all these conditions present does shock develop

COMPOSITION OF THE CEREBROSPINAL FLUID

In studying the clinical picture of shock attention been focused mainly on the functional biochemi changes in the blood and cardiovascular systems the mechanism of shock and its rational treatment prophylaxis are to be better understood attention mu be turned to the functional condition of the nerve cent to their metabolism, and to the nature of the cereb spinal fluid surrounding these centres The import rôle played by the CSF in the maintenance of functional condition of the nerve centres has be established by many years' clinical and laborat observations[1] Not only the penetration of abnorm substances from the blood into the CSF through blood-brain barrier, but even an altered equilibrium electrolytes in the CSF may be enough to induce seve changes in the nerve centres, sometimes fatal In som cases we have observed that changes in the potassiu and calcium ion concentration were related to the develo ment of a shock-like state (Voskressensky, Nodia) T injection of small doses of calcium salts directly into t cerebral ventricles induces a condition of great depressi under experimental conditions, while a minimal dose potassium salts will produce excitation, sometim leading to the animal's death by exhaustion Moreove the changes in the vegetative nervous system induc by strong peripheral stimulation are closely related the pre-existing chemical composition of the CSF, a in particular to the concentration of potassium an calcium in it

Attempts to combat shock must be primarily directe towards restoration of the circulation In man instances however these efforts to combat shock by dire action on the cardiovascular system may fail becaus in the presence of an intact blood-brain barrier, they d not affect the condition of the central nervous system Many drugs are without action on the central nervou system when injected peripherally, whereas when directl injected into the CSF they give a maximal and powerf effect Moreover, their action when introduced directl into the CSF may be exactly opposite to that obtaine when they are injected peripherally When injecte into the subdural or subarachnoid spaces, many drug are less effective than they are when introduced directl into the lateral cerebral ventricles The most importa agents in this respect are potassium and calcium

EFFECT OF INJECTING POTASSIUM

Laboratory experiments by G J Chvoles at th institute have shown that the direct introduction potassium ions into the lateral ventricle or cistern magna gives rise to strong excitation of the sympathet nervous system in cases of experimental traumati anaphylactic peptone and histamine shock Phosphat ions, by reducing the concentration of free calcium ion lead to a substantial decrease in the tonus of the para sympathetic centres Seemingly as a result there is increase in the quantity of circulating fluid due to mobi isation of blood from the blood depots and fluid from th tissue spaces Chvoles's animals were in a state of shoc as a result of serious wounds, with or without hæmo rhage , prostration was extreme, reactions to painf stimuli feeble or absent, blood-pressures were half norm or less, respiration scarcely perceptible In all h experiments, injection of a small quantity of potassiu phosphate (equivalent to 3–4 mg of potassium) cause the pathological manifestations of shock to disappea completely , blood-pressure rose to normal within 30 sec and respiratory rhythm and normal reactivity an excitability of the animal were restored Introductio of the drug into the subarachnoid space by lumbar o thoracic puncture was without effect however In som experiments where the blood-volume had been reduce to half normal by bleeding, introduction of potassiu phosphate into the ventricles was sufficient to bring th animal out of the state of shock without the necessity o compensating for the blood loss In control cases the

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[1] Stern L S *Acta med USSR* 1939, 2 384

Absorption —It is of interest to compare the output of xalate with the intake According to Cook (1933) mmon foods such as potatoes and cabbage contain -40 mg per 100 g , while rhubarb contains 210 mg per 0 g and spinach 320 mg per 100 g It is evident that ry little of the dietary oxalate normally appears in the ine, as the persistence of oxalate in the urine on an xalate-free diet or in starvation bears witness It is nerally thought that calcium oxalate is poorly absorbed d that its absorption is facilitated by the solvent action f the hydrochloric acid of the gastric juice , however, uantitative results on the absorption of oxalate under rmal conditions appear to be lacking As a prelimin- ry, it was demonstrated in human subjects that the rinary excretion of oxalate is constant over a period of veral days when diet is constant

Thus subject 1 excreted 31 2, 31 4 and 30 1 mg of xalate on the third, fourth and fifth day of a five-day eriod on a standard diet Similar figures for subject 5 ere 31 8, 30 3 and 32 4 mg In an experiment on sub- ct 1, 90 mg of oxalic acid in the form of sodium oxalate as taken daily for three days The oxalate was ingested ith the mixture of milk and water consumed at meal- me and is to be regarded as calcium oxalate Of 270 g of oxalic acid ingested during this period only 9 2 g was excreted in the urine

A similar experiment was conducted on a cat During 2 hree-day control periods the cat was fed on a diet of bread and ilk flavoured with 'Marmite,' but received no oxalate , the mounts of oxalate excreted were 14 and 9 6 mg During the ext three days the cat was fed as before and also given a total f 108 mg of oxalate (36 mg of sodium oxalate in 20 c cm of ilk daily by stomach-tube) 11 mg of oxalate was excreted n the 4th three day period the cat was starved and given 108 g of oxalate (36 mg in 20 c cm of water daily) and excretion ose to 33 3 mg In the final three day period the cat was tarved and given no oxalate , excretion fell to 10 9 mg

Experiments with rhubarb —Further experiments were arried out on human subjects 1 and 2 to investigate the bsorption of oxalate when a meal containing rhubarb as consumed Changes were made only in the main meal of the day, the remainder of the diet being constant and low in oxalate With subject 1 the daily output of oxalate rose from 32 7 to 59 3 mg when rhubarb but no milk was taken with a meal consisting of potatoes, meat and sprouts (table II) When a similar meal containing rhubarb was accompanied by ½ pint of milk, reconstituted from milk powder, the oxalate excretion remained within normal limits In a similar experiment with subject 2 the meal consisted of meat, potatoes and carrots When rhubarb was taken with this meal a value of 67 9 mg was obtained for the urinary oxalate compared with a value of 31 1 mg when ½ pint of fresh milk accompanied a similar meal on a subsequent day A further experiment was carried out on subject 2 in which 0 4 g of calcium as calcium chloride was consumed with the rhubarb , again the oxalate excretion remained within normal limits The rhubarb used in these experiments was of the "forced " or early type and was stewed with sugar in the usual way The figures in table II refer to the weight of uncooked rhubarb

TABLE II—EFFECT OF MILK AND CALCIUM ON EXCRETION OF OXALATE

Subject	Date	Main meal	Oxalate in 24 hr spec urine
	1942		(mg)
1	April 6	Potatoes 9 oz sprouts 4 oz meat 2 oz rhubarb 6 oz reconstituted milk ½ pint	35 3
	, 8	Potatoes 9 oz , sprouts 4 oz , meat 2 oz coffee biscuits	32 7
	, 9	Potatoes 9 oz sprouts 4 oz , meat 2 oz , rhubarb 6 oz water ½ pint	59 3
	,, 10	As on April 8	36 9
2	April 11	Potatoes 8 oz carrots 5 oz meat 2 oz , rhubarb 7 oz , water, ½ pint	67 9
	13	Potatoes 8 oz carrots 5 oz , meat 2 oz coffee biscuits	28 3
	, 14	Potatoes, 8 oz , carrots, 5 oz , meat 2 oz , rhubarb, 7 oz , milk ½ pint	31 1
3	April 17	Potatoes, 8 oz , carrots, 5 oz , meat 2 oz , rhubarb, 5 oz , calcium 0 4 g in water	30 8
	,, 18	Potatoes, 8 oz , carrots 5 oz , meat, 2 oz , rhubarb, 5 oz water	49 1

DISCUSSION

It appears from these experiments that the absorption and excretion of oxalate is greatly diminished when milk or calcium is taken with rhubarb Evidently, oxalate is only absorbed in significant quantity when it is present in the intestine in the soluble form A foodstuff such as rhubarb which contains a large excess of soluble oxalate may evidently cause the onset of a temporary but heavy oxaluria unless sufficient calcium is present in the intestine to precipitate the oxalate as the almost insoluble calcium salt Milk appears to be the ideal source of calcium for this purpose, since it is usual to take milk in various forms at mealtimes In addition, the buffering power of the milk may be of some importance, since calcium oxalate is unlikely to be redissolved in the stomach unless the pH of the stomach contents is low While one would expect the oxalate to be reprecipitated as the calcium salt in the intestine it is conceivable that when the acid chyme is neutralised some oxalate may not be immediately precipitated as calcium oxalate if substances capable of hindering this precipitation are present It is evident that the absorption of oxalate is closely connected with the quantity of calcium in the intestine *It has already been demonstrated that the* absorption *of calcium* is *related to the oxalate* content of food Thus Fincke and Sherman (1935) attributed the poor absorption by rats of the calcium in spinach to the presence of oxalate More recently Speirs (1939) showed that not only was the calcium of spinach poorly absorbed but that when it was taken with milk the availability of the calcium of the milk was diminished The above results on the absorption of oxalate are in agreement with these findings It is logical to suggest that a meal containing much soluble oxalate should be accompanied by milk in some form In this way the absorption of oxalate would be cut to a minimum and the tendency to alimentary oxaluria avoided, while at the same time the intestine would be assured of an uninterrupted supply of available calcium

SUMMARY

A group of 14 normal people (10 men, 4 women) living on an uncontrolled diet excreted 20–47 mg of oxalate a day (average 33 mg) On a constant diet the excretion of oxalate in 2 subjects was found to remain steady over several days

Soluble oxalate given by mouth to a cat on a diet containing milk did not raise the output of oxalate , but the same dose given while the cat was starving raised it considerably

In 2 human subjects a meal containing rhubarb raised the output of oxalate to double the normal figure, whereas if milk or calcium chloride was taken with the meal the output did not materially increase

At least part of the oxalate absorbed from the intestine is excreted by the kidneys, and if present in large quantities may favour the formation of stones Calcium precipitates oxalate in the intestine and thus prevents its absorption

It is recommended that milk should be taken with rhubarb and spinach, which are rich in oxalates, in order to avoid excessive oxalate absorption

I wish to thank Prof E C Dodds for suggestions and criticism, Mr P C Williams, BSc, for help with the animal experiments, and those members of the staff of the Courtauld Institute who acted as subjects in the experiments

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Lease-Lend —The following pharmaceutical products have been imported from the United States under the Lease Lend arrangement and will shortly be available for distribution amidopyrine, barbitone, benzocaine, pancreatin USP, peptone USP IX, phenazone, phenobarbitone, phenobarbitone soluble, pot guaiacol sulphonate, theophylline, urethane carbromal, pepsin 1/10,000

The nucleus always lies close to the visceral pleura, and in a constant position in the right lung Its site in the adult male is 6 cm from the midline in the 2nd right intercostal space, in women it lies at 5 5 cm and in children at 4 5 cm from the midline in the same intercostal space The regularity of the site is remarkable, and it permits accurate puncture even when radiological localisation is unsuccessful

TECHNIQUE

The patient is given calcium for three days before operation, and receives a hypodermic injection of morphia shortly before the actual puncture The site of the lesion is checked from the X-ray films or is marked out from the measurements given above After careful preparation of the skin a needle 5–6 cm long and 1–2 mm in diameter is inserted perpendicularly to the surface to a depth where it just traverses the pleura and enters lung To those experienced in artificial pneumothorax work there is no difficulty in recognising the entry of the needle into the pulmonary tissue

Calcium should also be given in the postoperative period

RESULTS

The operation is not dangerous and is usually well tolerated Patients do however complain, within a few hours, of slight shortness of breath, shivering and pain radiating through the chest from the point of puncture Sometimes the temperature is slightly raised for a day or so and there may be slight staining of the sputum In only 2 patients was a pneumothorax noted and in both the symptoms disappeared with the withdrawal of air next day Provided the patient is not in an advanced stage of the disease the effects of the puncture are surprising appetite and weight both improve, while temperature, sweating and sputum all tend to decrease The changes are most notable in the milder types of phthisis Exudative lesions tend to resolve and there seems to be no risk of dissemination of the disease In the absence of an obvious-ulcero-cavernous focus healing is rapid in 60–70% of the cases treated, judged by disappearance of tubercle bacilli from the sputum Changes in the sedimentation-rate and in the hæmogram appear quickly and run parallel with the detoxication and general improvement in the patient's condition

In the grosser forms of cavitated disease beneficial changes are not so apparent, though there is some resolution in the affected areas and cavities seem to clear up over a period of months Even in this type of case I think the healing trend is quicker than with other methods of treatment, and 40–50% successful results may be claimed Hæmoptysis occurs in a good many cases and is regarded as marking the onset of fibrosis before it reaches the cicatricial stage Cavities up to 3–4 cm in diameter diminish appreciably in size and may even close, though a second or even a third puncture may be used with advantage if improvement does not seem to be being maintained The interval between punctures should be well over a month In oldstanding sclerotic cavities I use cavernoscopy in order to cauterise the draining bronchus, about 4–5 months after the nucleus puncture (Lavalle 1941) Large apical cavities with adherent pleural layers do not often alter greatly in size and require thoracoplasty for their closure

The improvement in tuberculous lesions in other parts of the body after puncture is comparable to that seen in the lung Larynx, bowel, glands and joints benefit to about the same extent as the actual pulmonary lesions In combined lung and bone-joint forms of tuberculosis I find that only 20% of cases treated by lung puncture improve, but if in addition the nucleus in the diseased bone is locally treated along similar lines the successful cases reach 75% The more severe forms of joint disease, particularly tumor albus of the knee, only respond to the local bone puncture which I have described elsewhere[3]

I should like to emphasise that puncture of the lung is relatively easy to perform, and is harmless to the patient If the beneficial effects of the original puncture are not maintained the procedure can be repeated and in any case it should be done after any attack of intercurrent infection, such as influenza One puncture is sufficient, however, in most cases

SUMMARY

Puncture of the "nucleus of post-allergic has proved beneficial in 60–70% of cases of tuberculosis without cavitation and in 40–50% with cavities

The nucleus occupies a constant position in second right intercostal space It can sometimes identified radiographically, but is often blurred by ment of the lung tissue

Puncture is harmless and is easy to perform It now been used in over a thousand cases

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ABSORPTION AND EXCRETION OF OXALATE

J F BARRETT, B SC LOND

(*Courtauld Institute of Biochemistry, the Middlesex h*

CLINICAL interest in the metabolism of oxalic oxalates is focused on the presence of calcium oxal stones and on the occurrence of crystals of oxalate in the urine Such crystals are often viewed suspicion, since it is possible that they may lead to development of calculi containing calcium Commonly but not invariably crystals of calcium are found in the urine after eating foodstuffs rich oxalate, notably rhubarb and spinach Rhubarb especially, is occupying a more prominent position diet of the nation under present conditions, and the spring and summer is extensively used as a substitute for fruit It therefore seemed to be of interest to investigate the factors influencing the absorption and excretion of oxalate

In spite of many investigations carried out in the on this subject, no clear picture has been owing to the difficulties of accurately determining in urine Thus as late as 1931 Cerecedo, having a fivefold increase in the urinary oxalate in one ment, stated that owing to the inaccuracies of the methods in use at that time the inclusion of this result was not justified. In the next year, Dodds and Gallimore (1932) introduced a method for the determination of oxalate which though laborious yielded accurate and reproducible results This method in a slightly modified form has been used in the determinations which The more recent procedure of Heikel and Koch (193 embodies the routine addition of extra oxalate to urine in order to obtain a suitable precipitate of calci oxalate The dubious nature of this operation reflected in the considerable fluctuation in the daily put of oxalate in their subjects The conclusions require confirmation under strictly normal con and with a more reliable method

INVESTIGATION

Normal output —The normal daily output of oxalic in the urine is usually given in textbooks as 15–20 mg although some determinations by Widmark (1937) gave the normal range as 14–56 mg in the case of medical students The results obtained with 14 normal people of various ages and of both sexes are given in table I A range of 20–47 5 mg per day was obtained with an average excretion of 33 6 mg This investigation was conducted during the winter and spring of 1941 and the diet of the subjects was unrestricted The effect of diet was shown subject 5, whose output rose to 67 mg per day when a containing rhubarb and spinach was eaten Subject ate spinach regularly when obtainable It is that the normal output of oxalate is higher than generally supposed

TABLE I—DAILY OUTPUT OF OXALIC ACID IN NORMAL SUBJECTS

Subject	Age and sex	Weight		Ox ac per day	Subject	Age and sex	Weight		Ox ac per day
		st	lb	(mg)			st	lb	(mg)
1	30 M	12	4	36 8	8	60 F	10	10	[illegible]
2	25 F	8	8	26 5	9	62 M	9	10	[illegible]
3	38 M	10	6	40 3	10	33 M	13	7	39 6
4	19 M	9	8	36 9	11	29 F	8	12	27 5
5	19 M	10	6	38 2	12	29 M	10	9	38
6	52 M	9	4	47 5	13	27 M	10	9	41
7	26 M	10	7	29 5	14	44 F	8	10	[illegible]

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3 *Surg Gynec Obstet* 1941, 73, 108

THE LANCET

NDON SATURDAY, NOVEMBER 14, 1942

CONTROL OF VENEREAL DISEASE

HE chief medical officer to the Ministry of Health o be congratulated on the tact and persistence he shown in securing the withdrawal of the taboo on mention of venereal disease on the radio and in the ly press His opponents had a certain case, for parents want to have their young children's iosity aroused about this topic, and it is they and the BBC lecturers or the newspaper editors who ve to parry awkward questions But the case for blicity is far stronger even from the point of view the family group, which suffers more than anyone ough ignorance of the dangers of infection Sir LSON JAMESON had to call attention to a rise in own civilian infections of syphilis from 5000 in 1939 5600 in 1940 and 7300 in 1941 If Service infections are added the rise is 70% and a parallel increase gonorrhœa would probably be revealed if the figures uld be ascertained He estimated that there were arly 70,000 new venereal infections last year, not a rprising figure for a nation of 45 000,000, subject the disruptions and strains of war, but in a preventle group of grave diseases just 70,000 too many

The first reaction of the press to its new-found eedom was a series of leaders full of valuable informaon for the public, but containing also some rather ive assumptions The writers seemed happily naware that their papers had been the last stronghold f an obsolete tradition and that the real pioneers in reaking down the policy of secrecy are now dead of ld age or on the verge of a dignified retirement he National Council for Combating Venereal Diseases now the British Social Hygiene Council) was formed 1916 and from that date onwards thousands of ctures have been given to every variety of audience nd masses of informative literature have been istributed Even in 1919 the Church Congress at eicester had a full and frank discussion on venereal isease and its moral and social implications, in which he then Archbishop of Canterbury took a leading art The 200 free clinics to which the chief medical fficer drew attention could not have flourished ithout strong local support That the demand for nlightenment has already spread very far is shown by he results of a Gallup poll published in the *News hronicle* of Sept 16 The interviewers found that 3% of men and 76% of women were in favour of ublic bureaus for giving more information on enereal disease What help is newspaper or BBC ublicity likely to give towards solving the problem ? t should certainly arouse flagging interest and bring nfected persons more quickly to the clinics or to their wn doctors Indeed, one of the most useful ways in hich the daily press could assist is by publishing articulars of local clinics in its advertisement lumns, side by side with those of the Ministry of abour or the Ministry of Food In regard to preveníon however, it is not clear that publicity can do uch more than has already been done, unless more [illegible] on the dangers of promiscuity and the [illegible] g a high standard of sex behaviour [illegible]. The chief medical officer pointed out quite rightly that he spoke only as a doctor and could only lay the medical facts before the public But knowledge of medical facts is not the end but only the beginning of wisdom There is no medical question in which the medical and moral aspects are more closely interlocked than in this one The value of the whole campaign depends on the extent to which leaders of public opinion are ready to take up the challenge the doctors have thrown out A further consequence of enhanced public interest has already emerged in a renewed demand for some form of compulsion. Notoriously the country is prepared to *tolerate, as never before, invasions of personal freedom* provided they are for the common good The Gallup poll elicited the curious fact that, of the sample of the general public questioned, 64% were actually prepared to support a law requiring tests before marriage, though few of them could have thought about the question before it was put to them The Ministry of Health is no doubt keeping its ear to the ground and will take advantage of any public demand for useful measures

It is clear, however, that many technical complications unguessed by lay enthusiasts will have to be considered Does the incidence of marital transmission of syphilis by spouses infectious at the time of marriage justify the vast trouble, expense and unpleasantness of mass blood tests for every prospective bride and bridegroom ? Are experts agreed as to what they would do with the results of such tests when obtained ? It is hard to see how compulsory treatment could be applied without notification, but is compulsory notification of gonorrhœa practicable in view of the difficulties of diagnosing the disease in women and of assessing cure ? Moreover, with the quick results of modern drugs it is not going to be easy to persuade all doctors to notify the unwilling patient whose straightforward and early gonorrhœa can almost certainly be cleared up in a few days Many cases of gonorrhœa, too, will not even consult a doctor now because they have no severe symptoms, and they would be much less likely to do so if the disease were notifiable, and it is the case of mild gleet that is particularly likely to spread infection Probably the best immediate return will be got from the compulsory control of known contacts who have infected others, provided for under a new Defence Regulation (see p 589) These people, whether male or female, will deserve little sympathy for any inconvenience they suffer, and the knowledge that such a measure exists will be a deterrent to the careless and selfish Yet the opportunities of the present time may not recur, and we must not waste them on half-measures If these diseases are to be overcome we must make the most of the cases which do seek treatment by examining every contact of every case The Services use what is in effect notification and compulsion—if a serving woman is infected by a serving man and can identify him, then he is examined, and vice versa It seems illogical under present conditions to apply this fundamental measure to one section of the population and not to all Whole-hearted propaganda can convince the public that these are diseases which must be controlled, and controlled now, if the authorities agree that this can only be done through notification and compulsory treatment they will not find public opinion immovable provided the preliminary bombardment is adequate

Reviews of Books

Epilepsy and Cerebral Localisation

A Study of the Mechanism, Treatment, and Prevention of Epileptic Seizures WILDER PENFIELD, MD Johns Hopkins, DSc Oxfd, professor of neurology and neurosurgery, McGill University, director of the Montreal Neurological Institute, THEODORE C ERICKSON, MD Minnesota, associate professor of surgery, University of Wisconsin London Bailliere, Tindall and Cox Pp 623 44*s*

DR Penfield and his colleagues begin this important book by saying that originally it was their firm intention to deal with focal epilepsy and to elaborate those aspects of it which interested them "with no thought of encyclopedic treatment" Unable to resist the encyclopædic e, however, they have satisfied it by inadequate ence to the rest of the huge subject with results h are ill-balanced and almost dangerous The book cked with original material derived from scrupulous ervation and faultless technique, but the preoccupa- ion of the authors with experimental surgery leads them to present epilepsy as a disease resulting from hosts of discrete lesions of varied pathology As far as they are concerned the local lesion is the thing epilepsy depending somehow on a biophysical or biochemical disorder and often inherited has an insignificant place in the book It would have been better to omit the major subject of essential epilepsy altogether and to have presented a treatise on focal epilepsy None the less, a long chapter by Dr Jasper on electro-encephalography is one of the best reviews of the subject so far published, and a study of the psychology of epileptic patients by Dr Hanover-Erickson is informative and balanced As a survey of the anatomy and surgery of convulsive disorders the book is unequalled

Surgery of Modern Warfare

(2nd ed.) Editor HAMILTON BAILEY, FRCS Edinburgh E and S Livingstone Vol II Pp 1000 40*s*

THE second volume completes the new edition of this comprehensive book on war surgery The articles on burns and on chemotherapy deserve special praise, the work on which they are based has been done in this war rather than the last, and they stand out by reason of their compactness and their satisfactory answers to many obvious questions Some of the advice given on anæsthesia is disappointing Surely the advantages of gas-oxygen and the disadvantages of ether in badly wounded patients need not be learned all over again after the work of Marshall and his colleagues in the last war And why should it be suggested that the anæsthetist in the battle zone must carry on without gas and oxygen cylinders? It is discouraging, too, to see Mr Jenner Verrall defending the guillotine amputation in a book intended as a guide to all the many who will have to do surgery under war conditions Where continuous after-care is assured no doubt it has advantages, but in the last war its use caused needless suffering when the care was broken by long-distance transport Illustrations are good and ample, and the companion volumes will be welcomed by war surgeons

A Descriptive Atlas of Radiographs

(5th ed) A P BERTWISTLE, MB Leeds, FRCSE London Henry Kimpton Pp 584 42*s*

A RADIOGRAPHIC atlas is a useful book for students and practitioners but to be effective it should contain first-class reproductions of common diseases and the diagnosis in every case should be fully established Some of Mr Bertwistle's radiograms are good, some are bad and many are indifferent There are cases in which the diagnosis is doubtful and some in which the diagnosis is wrong Thus a typical Charcot arthropathy of the lumbar spine is diagnosed as osteoarthritis (fig 269) "A deformed gall-bladder" (fig 553) is a common normal variation, and "an adhesion to the gall-bladder" (fig 555) is a Phrygian cap deformity Some pictures of gall-stones are printed wrong way round Under the heading "normal chest" (fig 695) the author makes the remarkable assertion that "the markings of the bronchial tree are beautifully seen, the older view that these markings are due to blood-vessels can be definitely discountenanced" Many of the reproductions in the gastro-intestinal section are poor, but the sections on normal bones, fractures and renal diseases are satisfactory The first edition of this atlas appeared in 1926 and it is obvious that many of the radiograms antedate that year Thus neither the technical nor the medical advances in radiology during the last 16 years are properly represented

Edinburgh Post-Graduate Lectures in Medicine

Vol II, 1940–41 By various authors Edinburgh Oliver and Boyd Pp 536 12*s* 6*d*

MOST of these Honyman Gillespie lectures have already received notice in our columns A reminder from F E Jardine of the value of clinical inspection is timely and salutary in these days of hasty recourse to special methods of investigation D M Dunlop's lecture on medical dietetics abounds in shrewd sense, and GP's who see the end-results of both medical and surgical treatment will wholeheartedly endorse the opinion that peptic ulcer is best treated by bodily rest and mental peace W F Harvey pleads for a simplification and a more extended use of blood-examinations and Charles Cameron discusses modern methods of treating pulmonary tuberculosis In the surgical field, W A Cochrane surveys the present position of orthopædics, Sir James Fraser of wound infection and accidental wounds, and W Mercer of fractures of the neck of the femur In his interesting account of the treatment of war wounds in France during May and June, 1940, J S Jeffrey points out that local applications of sulphonamide produce a concentration 80 times greater than when the drug is given by the mouth The diagnostic and therapeutic possibilities of tracheobronchoscopy and œsophagoscopy are considered by G Ewart Martin, and of special interest to those concerned with the care of evacuees is G H Percival's lecture on war and skin disease The volume ends with an informing and thoughtful lecture by R J S McDowall on the physiological approach to medical problems

Neuroanatomy

FRED A METTLER, MD, professor of anatomy, University of Georgia school of medicine London Henry Kimpton Pp 476 37*s* 6*d*

THIS book has been well planned to give the anatomical background needed in the study of clinical neurology It is accurate, orderly and devoid of ambiguity, the style is crisp and the nomenclature logical and consistent The 337 illustrations are all original and include reproductions of many novel dissections and unusual pictures of structures in the central nervous system Line diagrams in colour are never used to simplify but always to elucidate, and have been introduced to good effect, those representing the meningeal structures of the base, and the relationship of nuclear masses in the brain stem, are specially helpful The text is not interrupted by references but there is a full bibliography The author has been imaginative in meeting the advanced student's needs

Parents Revolt

RICHARD and KATHLEEN TITMUSS London Secker and Warburg Pp 128 3*s* 6*d*

THIS book, which has a foreword by Mrs Sidney Webb, is an examination with statistics of the causes leading to the limitation of families in England The limitation is now so great, the authors find, that the one-child family has come to be the thing and families of four or five are looked on as unwieldy and eccentric England as a power needs a large population, no doubt, but it is open at least to philosophic question whether England as a happy community needs more than the land can support, so that not everyone will immediately share the alar They tra and despondency of the writers of this boo vidualist the cause of shrinking families to the indi an average acquisitive nature of our society, but acquisitive cted has presumably been rampant since man owned a th and herds, and to denounce it will not put such a sens community values into English- and American-speak peoples as to restrain them from race suicide Nevert less, their indignation is stimulating, and their statist though they overload the book, provide starting-poi for informed discussion of a topic which affects the wh race truction of the fœtal vessels to the placenta ey do not accept that a patient has a true toxæmia less they can demonstrate "toxic" infarcts or scular diseases in the placenta The predisposing tor to the obstruction of the placental vessels is a osition of cholesterol under the endothelium In attempt to prevent this deposition, they administ ed thyroid in doses of gr 1½–3 daily to women tinuously from the third to the eighth month of gnancy, the incidence of toxæmia in these women nained the same as in a series of controls They n tried iodine in the form of 'Lipoiodine,' with a se of gr 1¼ iodine daily, throughout the same iod This fairly definitely reduced the incidence mild toxæmia, and possibly of the severer forms of æmia also though the figures are too small to stantiate this conclusion How this effect was ained is not clear, for the theoretical basis for the rk would lead one to expect a similar effect from yroid Nevertheless the results are sufficiently hope- l to warrant investigation on an adequate scale

These explanations of pregnancy toxæmia as a ult of placental infarction are supported by a con- lerable weight of evidence and probably represent advance towards the eventual solution It is a mulating mental exercise to try to account, on each tory in turn, for the different incidences of toxæmia hydatid mole, erythroblastosis fœtalis, plural gnancy, postmaturity, chorionepithelioma, parti- y separated placenta prævia, and retention of the centa for several days after delivery

DEFENSIVE SECRECY

The Duke of Wellington told Mrs Norton that, Chancellor of Oxford University, he was "much posed to authors" In their humbler sphere edical practitioners and hospitals are much exposed lawyers Whether as a counterblast to an un- elcome claim for professional fees or because cilities for treatment are too hopefully regarded as guarantee of cure, disgruntled patients or their xt of kin launch legal proceedings which are a otorious distraction of medical practice Legal oceedings must be met with legal aid "Say as ttle as possible," advise the defending lawyers, admit nothing" The teaching is doubtless sage ough Civil expressions of sympathy will be isted into confessions of carelessness A casual mark about a sheer accident will sound sinister hen repeated forensically in the opening speech of laintiff's counsel On the other hand, if it be not oo weak and too sententious to suggest it, are there o dangers in defensive secrecy? An overworked or nder-experienced nurse uses the wrong bottle, or repares the wrong solution of a dangerous drug, a ifficult and perhaps necessarily hurried diagnosis is t fault, or some other regrettable contingency occurs oyalty among colleagues and hospital staffs rallies ound If the patient pulls through, neither he or he nor the next of kin need be any the wiser Mean- while a precautionary silence is maintained But here is another side—the side from which the tients or their anxious relatives will be looking hen information withheld has at last been dragged ut by the coroner, confidence in the medical pro- ession and the hospital system will be jeopardised

A simple instance may illustrate our point, let it be given as a hypothetical case A patient aged 74 is taken by her daughter to hospital in a feeble condition The plinth normally used in the receiving department happens to be occupied because a child, accompanied by her mother, is awaiting examination The elderly patient is placed on an emergency table and her daughter is asked to withdraw Two hours later, and with no word said about an accident, the daughter sees the mother again and is shocked to find her face cut and bruised, nobody will disclose what has happened The daughter's husband calls at night in vain Twelve hours after the patient's death, and a day and a half after the accident, the family is told for the first time of her having fallen from the table in the receiving ward The details are elicited at the inquest There should have been at least two nurses in the ward, but a temporary cause had reduced the staff there to one student nurse The latter had done her best, standing between the two tables, to keep an eye both on the child and on the elderly patient, but, while the doctor was speaking to the child's mother, a bump was heard The 74-year-old woman had rolled off the emergency table, which turns out to have been just an operating table, perhaps twenty inches wide The medical evidence attributes death to hypostatic pneumonia (following immobilisation in bed), senility, myocarditis and arteriosclerosis The coroner makes his comments He knows that hospitals are short-handed, he knows that this particular hospital is in general admirably administered There, however, are the ineluctable facts The feelings of the relatives, baulked in their natural and proper desire for information, can be imagined A verdict of "death by misadventure," to which the coroner adds an expression of sympathy with the relatives, exonerates all concerned from the immediate implications of legal liability But there may well be an enlargement of the circle of folk outside who next time will wonder, almost suspiciously, what goes on behind those hospital doors, and why a patient's closest relations are denied their right to be told when something untoward has occurred

PLATELETS AND THROMBOSIS

Having shown how to measure the stickiness of platelets,[1] Wright has now applied her technique to a study of the changes after normal labour and after surgical operations,[2] since these are times when venous thrombosis is particularly liable to occur She found that parallel to the rise and fall of the platelet count there is a rise and fall in the stickiness of the platelets as measured by their disappearance from a heparinised sample of blood rotated in a glass bulb The greatest stickiness and the highest counts are found about the tenth day, after which there is a slow return to normal, taking about another ten days Simultaneous observations of the red cell sedimentation-rate showed that the changes had a different periodicity —a maximum increase about the fourth day—and consequently Wright concludes that plasma factors were not responsible for the changing stickiness of the platelets Her opinion is that large numbers of new platelets are released from the bone marrow in response to the stimulus of trauma and loss of blood, and it is these young forms that cause the excess stickiness All this goes to show that we must not concentrate too much on plasma factors in our efforts to avoid postoperative thrombosis, especially as the period of maximum platelet stickiness is also the period of greatest liability to thrombosis

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[1] See *Lancet* 1941 ii 609

[2] Wright, H P *J Path Bact* 1942, 54 461

LUNG PUNCTURE IN THERAPY

Much if not all of our treatment of pulmonary tuberculosis remains empirical, or is directed towards purely mechanical ends, and the essential problems underlying susceptibility and resistance remain unsolved Progress in the last fifty years has been marked by such milestones as the introduction of sanatorium regime, artificial pneumothorax and the other ingenious and determined developments of collapse therapy, the rise and fall of gold therapy and more recently the introduction of cavity drainage Each of these has enlarged the scope of available treatment, but the clinician, ably directed by the radiologist and abetted by the surgeon, has tended to focus much of his attention on the pulmonary lesion and to lean somewhat heavily on Providence in the matter of that humoral response which inevitably will determine the ultimate fate of his patient In his paper on another page Lavalle, of Buenos Aires, invites phthisiologists to adopt an ingenious operative procedure which, although directed to a focus in the lung, yet, he claims, exerts a beneficial influence on the whole defence mechanism both local and general He holds that puncture of a certain area of lung with a needle is followed by a degree of improvement that is beyond all reasonable expectation in the exudative stages of the disease His claims for improvement in ulcerative or cavernous forms are more reserved, but even then the healing tendency appears to run a more favourable course and assists any necessary surgical intervention

Houghton[1] has lately drawn attention to the improvement that sometimes follows trauma to the lung in the drainage of tuberculous cavities, even when actual drainage of the cavity is not established, the lung has simply been punctured by a fine trocar and cannula But the basis of Lavalle's operation lies in the puncture of a definite area—the "nucleus of postallergic focal infection" This nucleus is said to lie with remarkable constancy just under the lung deep to the second right interspace in front, and its existence should readily be confirmed or disproved by pathologists What happens when this nucleus is punctured is conjectural Lavalle suggests that there is a freeing of antigens or antibodies from the focus, and that this produces a rise in local and general resistance Alternatively some of the effect may be brought about by an entirely non-specific action from local trauma of the tissues Trauma elsewhere (in the skin, for example) is known to modify the reactivity to other stimuli, with the release of histamine like bodies What, for instance, underlay the remote effects of the seton which were so long unquestioned? There seems to be little difference in the local effect produced by trauma and by certain organic or inorganic substances It will be recalled, moreover, that non-specific shock therapy has been advocated in the treatment of pulmonary tuberculosis and that a variety of antigens have been used A well-known empirical effect of trauma is seen when tuberculous peritonitis is treated by laparotomy, often to the great benefit of the patient Bone and joint tuberculosis has similarly been subjected to trauma by Lavalle and others with advantage in a number of cases Such explanations of the observed phenomena are, however, purely speculative

The simplicity of the puncture operation is at same time an encouragement and a disadvan Uncontrolled enthusiasm before there has confirmation of results may bring the procedure disrepute before its value and place in treatment be assessed But its novel principle cannot discarded without trial in view of the results claim for it

TOXÆMIA AND PLACENTAL ISCHÆMI

It is nearly thirty years since Young first pounded his theory that placental ischæmia is origin of the toxæmias of pregnancy During time the theory has received much lip service has not been investigated at all thoroughly by o workers. It has achieved a place in the textb side by side with the dozen other theories, perhaps because of these evil associations, per merely as a result of age, has lapsed graduall partial oblivion Now Young[1] has jerked the th back into the full glare of attention Its basis rem the same, but it is supported by so many new f that it must be given full consideration in any mo study of the toxæmias and will certainly stimu research

Young's primary thesis is that certain wo have an "abortion taint" which is possibly endoc in origin and reveals itself by interference with maternal circulation to small or large areas of placenta In the early stages of pregnancy causes abortion, in the later stages it causes place necrosis or retroplacental hæmorrhage This t shows a strong tendency to recur in successive p nancies, and in any pregnancy may result in an these three manifestations The more serious c sequences arise when the maternal circulation part of the placenta is disturbed in late pregna This part undergoes necrobiotic changes which not be recognisable in the first day or two, even hi logically, but subsequently go through the var stages of infarction Even in its early stages necrosing tissue produces substances which ca albuminuric toxæmia, a large necrosis gives ris pre eclampsia or eclampsia There is however essential condition for this effect the fœtal circ tion must continue Too large a placental les such as one involving over half the organ, kills fœtus and prevents the development of the toxæn Accidental hæmorrhage is the other serious manife tion of the abortion taint in late pregnancy Hæn rhage takes place behind a part of the placenta, w is thus cut off from the maternal circulation If blood can escape externally the placental damag usually small and there is little resultant toxæn If the bleeding is concealed a greater amount placenta is separated and toxæmia follows in t thirds of cases If the hæmorrhage is so severe t the fœtus is killed, toxæmia does not follow, tho there may be a subsequent azotæmia similar in so ways to that seen in the crush syndrome Col Bartholomew and Grimes[2] agree that placen necrosis is responsible for the toxæmias of pregnan and that the severity of the toxæmia depends on mass of the infarction But they differ from You in maintaining that the infarction is caused truction of the fœtal vessels to the placenta y do not accept that a patient has a true toxæmia ss they can demonstrate "toxic" infarcts or cular diseases in the placenta The predisposing or to the obstruction of the placental vessels is a osition of cholesterol under the endothelium In attempt to prevent this deposition, they adminis- d thyroid in doses of gr 1½–3 daily to women tinuously from the third to the eighth month of gnancy, the incidence of toxæmia in these women ained the same as in a series of controls They n tried iodine in the form of 'Lipoiodine,' with a e of gr 1⅓ iodine daily, throughout the same iod This fairly definitely reduced the incidence mild toxæmia, and possibly of the severer forms of æmia also though the figures are too small to stantiate this conclusion How this effect was ained is not clear, for the theoretical basis for the rk would lead one to expect a similar effect from roid Nevertheless the results are sufficiently hope- to warrant investigation on an adequate scale

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[1] Houghton, L E *Lancet*, 1942, ii, 199

[1] Young, J *J Obstet Gynæc* 1942 49 221

[2] Colvin, E D, Bartholomew R A and Grimes, W H *Amer Obstet Gynec* 1942, 43, 183

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DEFENSIVE SECRECY

THE Duke of WELLINGTON told Mrs NORTON that, Chancellor of Oxford University, he was 'much posed to authors" In their humbler sphere dical practitioners and hospitals are much exposed lawyers Whether as a counterblast to an un- lcome claim for professional fees or because cilities for treatment are too hopefully regarded as guarantee of cure, disgruntled patients or their xt of kin launch legal proceedings which are a torious distraction of medical practice Legal oceedings must be met with legal aid "Say as tle as possible," advise the defending lawyers, admit nothing" The teaching is doubtless sage ough Civil expressions of sympathy will be isted into confessions of carelessness A casual mark about a sheer accident will sound sinister hen repeated forensically in the opening speech of aintiff's counsel On the other hand, if it be not o weak and too sententious to suggest it, are there o dangers in defensive secrecy ? An overworked or nder-experienced nurse uses the wrong bottle, or repares the wrong solution of a dangerous drug, a ifficult and perhaps necessarily hurried diagnosis is t fault, or some other regrettable contingency occurs oyalty among colleagues and hospital staffs rallies ound If the patient pulls through, neither he or he nor the next of kin need be any the wiser Meanwhile a precautionary silence is maintained But ere is another side—the side from which the tients or their anxious relatives will be looking hen information withheld has at last been dragged ut by the coroner, confidence in the medical profession and the hospital system will be jeopardised

A simple instance may illustrate our point, let it be given as a hypothetical case A patient aged 74 is taken by her daughter to hospital in a feeble condition The plinth normally used in the receiving department happens to be occupied because a child, accompanied by her mother, is awaiting examination The elderly patient is placed on an emergency table and her daughter is asked to withdraw Two hours later, and with no word said about an accident, the daughter sees the mother again and is shocked to find her face cut and bruised, nobody will disclose what has happened The daughter's husband calls at night in vain Twelve hours after the patient's death, and a day and a half after the accident, the family is told for the first time of her having fallen from the table in the receiving ward The details are elicited at the inquest There should have been at least two nurses in the ward, but a temporary cause had reduced the staff there to one student nurse The latter had done her best, standing between the two tables, to keep an eye both on the child and on the elderly patient, but, while the doctor was speaking to the child's mother, a bump was heard The 74-year-old woman had rolled off the emergency table, which turns out to have been just an operating table, perhaps twenty inches wide The medical evidence attributes death to hypostatic pneumonia (following immobilisation in bed), senility, myocarditis and arteriosclerosis The coroner makes his comments He knows that hospitals are short-handed, he knows that this particular hospital is in general admirably administered There, however, are the ineluctable facts The feelings of the relatives, baulked in their natural and proper desire for information, can be imagined A verdict of "death by misadventure," to which the coroner adds an expression of sympathy with the relatives, exonerates all concerned from the immediate implications of legal liability But there may well be an enlargement of the circle of folk outside who next time will wonder, almost suspiciously, what goes on behind those hospital doors, and why a patient's closest relations are denied their right to be told when something untoward has occurred

PLATELETS AND THROMBOSIS

HAVING shown how to measure the stickiness of platelets,[1] Wright has now applied her technique to a study of the changes after normal labour and after surgical operations,[2] since these are times when venous thrombosis is particularly liable to occur She found that parallel to the rise and fall of the platelet count there is a rise and fall in the stickiness of the platelets as measured by their disappearance from a heparinised sample of blood rotated in a glass bulb The greatest stickiness and the highest counts are found about the tenth day, after which there is a slow return to normal, taking about another ten days Simultaneous observations of the red-cell sedimentation-rate showed that the changes had a different periodicity —a maximum increase about the fourth day—and consequently Wright concludes that plasma factors were not responsible for the changing stickiness of the platelets Her opinion is that large numbers of new platelets are released from the bone marrow in response to the stimulus of trauma and loss of blood, and it is these young forms that cause the excess stickiness All this goes to show that we must not concentrate too much on plasma factors in our efforts to avoid postoperative thrombosis, especially as the period of maximum platelet stickiness is also the period of greatest liability to thrombosis

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[1] See *Lancet* 1941 ii 609

[2] Wright, H P *J Path Bact* 1942, 54, 461

Annotations

PROF LINA STERN

BESIDES conducting research the Institute of Physiology at the Second Moscow State Medical Institute trains teachers and research workers, many of those who studied there now hold chairs and lectureships in laboratories throughout the Soviet Union Prof Lina Stern, whose paper on shock appears on another page, is director of the institute Her own interest in research dates from 1902 when she was a student at the University of Geneva, there, working in the laboratory of Prévost she began by studying internal secretions of the liver Her MD thesis, written in 1903, was a physiological study of ureteric contraction, and was awarded a university prize She became an assistant in Provost's laboratory in 1904, and her work as a teacher and scientist was increasingly notable from that time onward In 1906 she was accredited lecturer at Geneva, and in 1917 was appointed to the chair of physiological chemistry In 1925, with a considerable European reputation, she left Geneva to share in social reconstruction in Soviet Russia She founded her own school of physiologists, which has made a study of tissue barriers, particularly the blood brain barrier, oxidation in animal tissues, the influence of metabolites on various physiological systems, the relations between central and peripheral sympathetic and parasympathetic centres, and the effect of high-voltage currents in animals Since war broke out she has been engaged on physiological problems which have immediate application, among which is her method, now described, of directly influencing nerve centres in cases of shock She has fought hard for the freedom of women, and many of her women students now hold important research posts In 1939 she was elected the only woman member of the Academy of Sciences of the USSR

RADIUM FOR UTERINE HÆMORRHAGE

SINCE the early work of the French gynæcologists in 1906–07 radium has been successfully used in various forms of uterine hæmorrhage Although its hæmostatic action is not understood systematic work has put dosage on a proper basis A survey of the Medical Research Council reports *Medical Uses of Radium* shows that for a time a wide difference of opinion existed as to the best dosage for a given set of clinical conditions, but since 1933 data from the Royal Free Hospital and the Marie Curie Hospital have confirmed the view that an exposure *to 50 mg of radium for 22–24 hours can be looked on* as a maximum need for uterine hæmorrhage Curiously enough while the interstitial radium treatment of cancer started with strong doses which gradually diminished as experience grew, the opposite tendency was taking place in the cases of uterine hæmorrhage, for much of the early work by Oudin, Verchere and Wickham was carried out with 50 or 100 mg of radium, the exposures being for an hour or so repeated very cautiously at intervals A further step was the recognition that the appropriate dose of radiation depends on the age of the patient, and in Elizabeth Hurdon's *Cancer of the Uterus* the fullest information on technique, dosage and results are given In an analysis of 837 cases under observation for 1 to 10 years up to the end of 1935, 97% of the menopausal cases and 78 5% of the younger patients have remained well without further treatment A recent unpublished report from the Marie Curie Hospital implies that radon has proved a complete substitute for radium in the treatment of uterine conditions Here the exposures seldom exceed 24 hours, and there is little difficulty in adjusting quantities so that the same dose results Russ and Scott [1] have shown that in the destructive action on the ovary of the rabbit radon can replace radium over quite a wide range in the quantities and times of sure Radon however is not a good substitute for when, as in breast cancer, exposure may continue week on end, the decay of radon cannot in such a safely be made good by increasing the radon the needles, because the higher intensity is not tolerated by normal tissues

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[1] Russ, S and Scott, G M *Lancet*, 1940, i, 1048

VIRUS INFECTIONS OF THE MAMMALIAN

WHEN Rous and Murphy[1] used the developing embryo for the cultivation of Rous sarcoma they not have realised the potentialities of the field they opened up Hardly a week goes by but the embryo its membranes are found to have new use in the study the growth of viruses, bacteria, spirochætes, fungi protozoa Goodpasture was one of the first to seize the possibilities of the method and has continued adapt it to more and more problems Viruses actively growing cells in which to multiply and emb tissues seem to be the most suitable for this pur All viruses are not able to infect avian embryonic but may grow in the embryonic tissue of other su hosts, such as *mouse embryo or guineapig e* Recently Sanders and Jungeblut [2] found that the m strain of SK poliomyelitis virus grew best in t cultures of embryonic mouse brain, reaching a titre 10^{-8} in the 6th culture generation, but also grew cultures of embryonic guineapig brain, reaching a titre 10^{-4} Non-nervous mouse embryonic tissue was found capable of maintaining a certain basic level virus growth but was greatly inferior to the cultures central nervous system tissues The embryonic tissue was found quite unsuitable The growth of viruses in embryonic tissues has greatly facilitated advance of knowledge of virus and rickettsial dise For their volume these tissues often yield many times quantity of infective agent previously available other sources for use as antigen for complement fixation and as vaccine for immunisation The infective agents may remain highly virulent and have to be inactivated, as in rickettsiases, while in yellow fever and vaccinia virus becomes attenuated during passage in these Though these chick tissues have been used for years it was only recently that Berge and Hargett pointed out that protein of 14 day chick embryos, in contrast to that of 10 day embryos, is highly anaphy lactogenic for young guineapigs This probably explains the severe reactions obtained with the equine encephalomyelitis vaccines made from the older embryos, in contrast to the slight or absent reactions from the yellow fever vaccine Poleff [4] and Findlay and MacCallum [5] used minced human placental tissues in suspended cell cultures for the growth of vaccinia and yellow fever virus Now Goodpasture [6] has advanced further by the ingenious method of grafting human fœtal membranes, chorion or amnion or both at once, on the chorioallantoic membranes of the developing chick embryo The tissues were placed mesodermal surface uppermost and were apparently nourished by plasmatic circulation Satisfactory infection was obtained by applying a paste of virus containing tissue to the graft 24–48 hours after grafting Using this technique grafts of human amnion were readily infected with the viruses of herpes simplex, variola, vaccinia and the virus of mare abortion, the last of these had not hitherto been propagated beyond doubt in the tissues of an alien species Human chorion was very resistant to all the viruses used This would explain the comparatively few cases of intra-uterine infection from infected mothers with such very contagious diseases as measles, mumps, chicken pox and influenza, though a number of infections with small-pox have occurred Wolf and others[7] have reported a case of prenatal inception of infantile toxoplasmosis, perhaps the chorion will be a good medium for growth of these organisms The experiments of Anderson and Goodpasture have also thrown light on the mechanism of immunity in some virus diseases, for they found that skin from a chicken hyperimmune to fowl-pox was readily infected with the virus when grafted on the chorioallantoic membrane of the developing hen's egg but again became refractory when grafted on the immune fowl A similar set of events occurred with skin from humans immune to cutaneous vaccinia, suggesting that in these diseases at least immunity depends on the antibody in the fluids bathing the tissues For some unexplained reasons many animals which are susceptible in the embryo to various viruses are resistant during the first few weeks of life, and some which are susceptible in the first few weeks gradually become more resistant with age though active growth of tissue is occurring The new technique of Goodpasture and his colleagues may make it possible to study specific resistance and susceptibility in a way that is impracticable in the intact host

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[1] Rous P and Murphy J B *J Amer med Ass* 1911 56 741

[2] Sanders M and Jungeblut C W *J exp Med* 1942 75 631

[3] Berge, T O and Hargett M V *Publ Hlth Rep Wash* 1942, 57, 652

[4] Poleff, L *C R Soc Biol* 1939, 130 1083

[5] Findlay, G M and MacCallum F O *Brit J exp Path* 1940, 21, 173

[6] Goodpasture, E W *Science*, 1942, 95 391

"THE DOCTORS MAYO"

In a full scale biography of the Mayos, father and sons, and an authoritative history of the Mayo Clinic Miss Helen Clapesattle has written an absorbing story[8] She is of the University of Minnesota to which the Mayo Clinic is affiliated, and she is to be congratulated on the historical accuracy of her record and the way in which she has handled that part of the story which concerns clinic staff now living Those who know the clinic intimately will find little fault with the results of her patient research, except that the wealth of the documentary evidence tends to slow up the swing of the story and make the book over long William Worrall Mayo, born in Eccles near Manchester, in 1819, migrated to the United States in 1845 He practised medicine as a pioneer physician in Minnesota against the primitive background of covered wagons, Indian insurrections, civil war and the rapid agricultural development of a frontier state He died in 1911, but not before he had seen his two sons William and Charles rise to medical eminence and international fame in the very village in which the father practised The main body of the book concerns the medical odyssey of these two remarkable men and the living memorial which they created The Mayo Clinic has probably exerted a more profound influence on American medicine and perhaps on world medicine than any other single factor How it was built and why it developed in a frontier village of Minnesota is told At a time when group medicine is being actively discussed this book presents a statement of its ideals, underlying principles and end-results Those who knew Dr Will and Dr Charlie personally will put the book down with admiration for its scholarship, but with the feeling that a shorter, more pungent biography is still possible, drawing a little more warmly two of the most remarkable characters, medical or otherwise, who have passed across the contemporary American scene

OPHTHALMIC BOGIES

H M Traquair[9] has made a collection of popular misconceptions concerning the eyes, some of which many medical men share with their patients Foremost of these is the question "Does over use cause disease of the eye?" The answer is an emphatic No The eye is a part of the body and subject to the same ills, and so one finds eye disease occurring chiefly as a result of such complaints as diabetes, nephritis, hypertension and toxæmia from whatever cause Disease of the eye will no more result from over-use than disease of the brain from too much thinking, or disease of the ear from too much listening At the same time, too much eye work will cause tired eyes, for which the cure is to rest them The term "eyestrain" has come to stay, but we do not speak of brain strain or ear strain No-one is surprised if their legs are tired at the end of the day, but all resent it if their eyes are weary The question then arises, "How much will glasses relieve eyestrain?" If there is an appreciable error of refraction this should be corrected in office and precision workers But even when this is done many will experience eye fatigue at the end of the day It is usually found in these patients that it is not the effort of accommodation that causes fatigue but the effort of convergence, and relief will come to them when their muscles—including internal recti—have an increased tone, whether this be brought about by exercises, holiday or both To supply these patients with convex magnifying glasses unless they are presbyopic, is to worsen their lot for the accommodation is thereby somewhat relieved but the effort of convergence required is greater than before

PHYSIOLOGY OF THE PREMATURE INFANT

CERTAIN physiological adjustments are usually successfully made by the newborn baby as he passes from a parasitic to an independent existence The immaturity of the prematurely born infant however, renders him less successful at such adjustments, and Levine and Gordon[1] of New York have discussed the physiological handicaps of the premature infant, leading logically to a consideration[2] of what can be done clinically to smooth the path Premature infants show respiratory difficulties which predispose them to asphyxial attacks and aspiration pneumonia Circulatory difficulties are indicated by cyanosis of the extremities and frequent œdema Faulty control of body temperature facilitates their well known tendency to alarming bouts of low and high temperature A diminished tolerance of the alimentary tract predisposes to gastro intestinal attacks Other problems include the increased fragility of the capillaries impairment of renal function, inadequate antenatal storage of minerals and vitamins, defective hæmopoiesis, immaturity of liver function and incomplete development of enzyme systems This formidable list is analysed by Levine and Gordon in some detail For example, the immaturity of the *respiratory system* can be shown to be related to at least five special problems The respiratory centre in the premature has a high threshold for all stimuli, nervous and chemical, the centre is relatively poorly vascularised, a sparsity of elastic tissue in the lungs delays full pulmonary expansion, the muscular and skeletal structures are weak and soft so that intrathoracic negative pressure is poor, and finally there is the persistence of a fœtal type of hæmoglobin which may not take up oxygen so well in the lungs as the normal adult type The erratic control of temperature in the premature infant is also shown to be due to various inter related factors First there is a low total heat production due to bodily inactivity and feeble muscular development Next a surface area out of proportion to the body-weight and a paucity of insulating subcutaneous fat permit excessive loss of heat by radiation and convection Finally Levine and Gordon show that the immaturity of the sweating mechanism leads to a breakdown of this means of compensating for exposure to heat The renal function of the premature infant has recently been studied by Young, Hallum and McCance[3], there is clear evidence of impaired urea clearance Of immediate practical importance is the physiological immaturity of the alimentary system It is shown that there are heightened demands for relatively large quantities of food, and yet enzyme activity, swallowing and sucking reflexes, and a faulty absorption of fat all exist to add to the difficulties Fat splitting is essentially normal but absorption is defective Further evidence of inefficient digestion is shown by studies on amino acid metabolism With a relatively high protein diet the premature infant tends to excrete certain intermediary metabolites of aromatic amino acids A striking discovery is that administration of vitamin C, in single or divided doses of 100–500 mg of ascorbic acid leads to a prompt rectification of this metabolic aberration and the disappearance of the abnormal metabolites from the urine This action of vitamin C is specific, and other substances chosen (vitamins A and D, riboflavin and others) were without effect This consideration and many others arising from the review by Levine and Gordon lead to certain valuable practical measures General aids for the handicapped premature start with an antepartum programme of diet, hygiene and general care Specific measures include procedures which tend to minimise the severity of such potentially impending symptoms as asphyxia, hæmorrhages, anæmia, birth trauma, hypothermia and infections The incidence of cyanotic attacks may be reduced by abstaining from the use of narcotics and analgesics shortly before and at delivery, by adequate resuscitative measures and the use of oxygen when indicated Skilled medical and nursing supervision are essential and stress is laid on proper feeding A low fat diet with relatively high carbohydrate and protein—digestion of the latter aided by vitamin C—is advocated together with relatively low fluid intakes A daily intake of 120 calories per kg is claimed to give optimal growth Great care over the post hospital regime of the premature baby is also important to complete the programme of his physiological adjustment

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[7] Wolf, A, Cowen D and Paige B H *Ibid*, 1941 93 548

[8] London Humphrey Milford, Oxford University Press Pp 822 22s 6d

[9] *Edinb med J* 1942, 49, 179

[1] Levine, S Z and Gordon H H *Amer J Dis Child* 1942 64 274

[2] *Ibid*, p 297

[3] Young W F, Hallum, J L and McCance, R A *Arch Dis Childh* 1941 16, 243

RATCATCHERS' RIDDLE

SEAFARING rats go roving, whether the world is at peace or war, and dockside rats are hardy parents of big families In the port of London an old feud between man and rodent has lately taken a new turn For many years the dock authorities and their tenants the shipping companies have destroyed rats and mice, but unsystematically, without that nice attention to choice of bait and type of trap which raises ratcatching to the status of a science Six-monthly inspection and fumigation of foreign going ships was established as an international practice in 1926 and the danger of spreading plague has thus been much reduced, but rats as carriers have a list of diseases to their discredit as long as their tails, and any live-and-let-live policy towards them would be fatal in the long run to the party which intended to do the living There were fears, at the outbreak of war, that if bombing broke open warehouses, and ratcatchers went to other fronts rats might go from strength to strength , these have not been wholly fulfilled, for though the rodent population of ships has increased the land-rats do not seem to have made full use of the opportunities offered by bombing to rodents of resource and sagacity The port health authority and the port of London authority have laid their heads together to make sure that things shall get better rather than worse Dr M T Morgan, port medical officer of health, and Mr James Fisher and Mr J S Watson, from the Bureau of Animal Population at Oxford, state[1] that the health authority has taken over all responsibility for rodent destruction while the port of London authority defrays the cost The scheme covers all the premises belonging to the port and also the premises of tenants and the craft of shipowners who choose to share in it by paying a subscription A staff of nine rodent officers carries out the work, and the bureau has collaborated and advised The Seamen's Hospital has lent laboratory accommodation

Some odd facts have been learned about rodents since the scheme has been running Thus the old English black rat, who came over at the time of the Crusades, prefers to die for the sake of boiled shrimps, used as bait in a breakback trap , whereas mice fancy rolled oats Brown rats can be put down conveniently by mass poisoning, a method to which the black rat fails to respond , and mice can rear naked families in a nest of frozen kidneys in a refrigerating chamber at 17° F of frost In the six months that the scheme has been running only 26% of premises have been visited by a single rat, and only 15% by a mouse or mice as judged on the evidence of droppings and the use of runs These are good figures, but the area within the jurisdiction of the port authorities is only a small part of the frontage of wharves, docks, basins, embankment and river side, and from the river densely populated industrial areas spread inland Thus the authorities are set about with good harbourage for rats, and even though they clear their own territory completely must be alert for fresh invasions There is much to be done before docks, premises and craft are cleared , and meanwhile it remains for London planning authorities to make homes in the dock region more appropriate for men and less attractive to rats

MINIMISING OXALURIA

IT has been known for very many years that the urine contains oxalates, and that, owing to the insoluble properties of their calcium salts, these are often in crystalline form and readily conglomerate into stones The oxalates excreted by the kidney seem to be derived from two sources, the internal metabolism of the body and the food We can do nothing at present to modify the former, but we know that certain foods, such as rhubarb, spinach and strawberries are very rich in soluble oxalates and that their ingestion often leads to a shower of oxalate crystals in the urine Indeed, the limitation of their consumption by people with stones in their urinary tracts is an old medical custom Most of us however like strawberries, and some of us are fond of rhubarb, and it is worrying to think that we may be ruining our urinary tracts by eating a little stewed rhubarb in the spring As so often happens, the solution of this difficulty has been the work of many people, most of them not even interested in oxaluria The studies of calcium absorption which have been made in the last fifteen years have clearly shown that anything which precipitates calcium tends to prevent its absorption if taken at the same time Phosphates, phytates[1] and oxalates[2] have all been demonstrated to have this effect Barrett, in the work reported on another page, has now established by experiment that the converse is also true Milk or calcium salts, taken with soluble oxalates, prevent the absorption of the latter so that no increase in oxaluria ensues This discovery rings true, for it is the local application of well-established principles So children may have their strawberries, and we may all enjoy our poached eggs on spinach, and our rhubarb tart, without a twinge of foreboding—provided we take plenty of milk with them

SIR NORMAN WALKER died on Saturday last, at Balerno, after a long illness He succeeded Sir Donald MacAlister as president of the General Medical Council in 1931, and retired from the presidency in 1939, but retained till last year the seat which he had held as Scotland's direct representative since 1906 He was in his 81st year

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[1] Preliminary report on Rodent Control in the area of the Port of London Health Authority, 5, Church Passage, London, E C 2

[1] McCance, R A and Widdowson, E W *J*

[2] Kohman, E F *J Nutrit* 1939, 18, 233

Special Articles

A CONFERENCE ON INJURIES

AT the invitation of the Director-General of Medical Services of the Ministry of Pensions, a conference of surgeons was held at Queen Mary's Hospital, Roehampton, on Sept. 23 and 24, Mr. G. R. GIRDLESTONE presiding.

Mr. T. P. KILNER demonstrated plastic and orthopædic cases. Arguing that the best dressing for a large open wound is skin, he suggested that all surgeons in charge of accident services should be given special equipment for cutting large Thiersch grafts of selected thickness. He demonstrated cases illustrating the use of thick Thiersch, tubular, and flap grafts. Mr. GEORGE PERKINS showed a patient with the moderate but disabling degree of equino-varus that is associated with the relative weakness of the external popliteal group of muscles after a partial sciatic recovery. These patients are much benefited by an inside iron, outside T-strap, and a toe-raising spring attached to the outer side of the sole opposite but not distal to the 5th metatarsal head. He then illustrated by a number of patients his ardent and infectious faith that it is the use, as natural as possible, of the muscles surrounding the fracture, which stimulates and accelerates union. He limits the extent of his plaster splints to the margin of safety. He dislikes the Bohler iron and the single stick, but likes a heel and toe movement with particular attention to the active use of the toes. He prefers crutches or two sticks with limited splinting to a long plaster which makes full weight-bearing safe, and even goes so far as to recommend that splints can be discarded, at least during the waking hours, on evidence provided by palpation and before there is radiographic evidence of union.

In the afternoon Prof. R. J. WILLAN discussed *failures after operation for derangement of the knee-joint*. He stressed the value of an exact history, and the far greater value of the evidence which could be elicited by X-ray examination as well as by clinical examination. Once again it was made clear that the diagnosis of an internal derangement, indicating the removal of a semilunar cartilage, requires great care and consideration. If this is true in civil life, decision to operate on a soldier or a pensioner requires even more deliberate judgment. The vital necessity for a thorough reconditioning was emphasised.

Mr. A. G. ORD spoke on the treatment of *minor fractures*, which he thinks are often kept in plaster too long. In his own clinic he finds periods of splintage safe which others might think dangerously short. The principle again emerged that it is the man and his team, rather than the method, which makes for success.

Prof. T. P. MCMURRAY discussed *non-union of fractures*, with special reference to the scaphoid of the wrist. In his opinion non-union of the scaphoid results from missing the diagnosis, or—though not so often—from a failure to reduce a displacement. It is wrong, he said, to suppose that the fractured scaphoid was almost always just a crack without displacement. Those in which there was displacement and which were not reduced would be less likely to unite, and more likely to give rise to a secondary arthritis. A practical test of deformity can be applied gently and slowly when the case was first seen after the accident; in the absence of post-traumatic swelling, if there was no deformity a full range of movement could be accomplished, whereas the presence of deformity would limit movement. He advocated carrying the plaster to the tip of the thumb; the position of the wrist should not be dorsiflexion, but neutral. Bone-grafting in his opinion should only be used in cases of delayed union in the presence of perfect reduction; it is a mistake, he thinks, to graft a scaphoid where there is malposition of the fragments, whether or not secondary osteoarthritis has already developed. In late ununited wrist fractures the bone may appear as if it were congenitally bipartite, but this condition will not, per se, be responsible for pain or for disability. The joint may possibly be a little more sensitive to a sprain, but after X ray has disclosed the old fracture the injury should be treated as a sprain and nothing more. On the other hand arthritis may have developed and a sprain or continued occupational strain may aggravate and so call attention to the arthritis. In the presence, then, of arthritis with non-union, bone-grafting is absolutely contra-indicated. If the disability is sufficiently severe the scaphoid should, in his opinion, be removed. He admitted that reported results have not been good, but thought that this was possibly due to traumatic methods of scooping out the scaphoid. He preferred a gentle if tedious dissection with scalpel and forceps. He admitted that the power of the hand was afterwards less than normal but the hand could be more freely used than in the presence of radioscaphoid arthritis. After this operation the joint should be kept at rest for 6 weeks, after which active movement should be gradually resumed.

In the discussion which followed some advocated arthrodesis for the secondary radioscaphoid osteoarthritis, as well as the excision of the proximal row of carpal bones.

Mr. C. GORDON IRWIN gave a cinematograph demonstration on *late surgery for disability of the hand* after gunshot wounds or septic infection. Where an old infection had flared up, he favoured delayed incision and active movements throughout. Provocative massage is advisable before doing a plastic operation, on account of the danger of flare-up. For Dupuytren's contracture, he thinks excision and grafting better than tenotomy. For stiff fingers, the position of the bones when fractured is immaterial, but the motor apparatus is important. He had never succeeded in restoring movement in stiff fingers by any form of surgery. Amputation of a finger is justified if it interferes with the patient's working capacity, but amputation of the hand is done too often, he considers, and the loss of a hand is a tragedy. He had performed several successful cineplastic amputations but the limb-fitters had never been able to fit a suitable prosthesis. Repair of extensor tendons is usually successful; repair of flexor tendons gives poor results. In amputation of the finger the head of the metacarpal should be left, since function is more important than a cosmetic result. He had not seen painful stumps after finger amputation except when there was a question of compensation or pension. Excision of nerve bulbs is never successful in abolishing the tenderness, he finds, and correction of malunited phalanges by ostectomy gives bad results. Fingers should not be splinted for longer than 7–10 days, and the thumb should not be held in the plane of the hand but abducted and splinted at right angles to the plane of the hand. He was not in favour of doing plastic reconstruction of fingers.—Mr. KILNER emphasised that for crippled hands prevention was better than cure. After seeing burns treated in many hospitals he was a strong supporter of the Bunyan method, and in particular he advocated the first-aid Bunyan bag, filled with sulphonamide. The important things in the treatment of burns were the early control of infection and the early removal of necrotic tissue so that the raw area could be covered with a skin graft at the earliest possible moment. The best dressing for a raw surface area was transplanted skin. Early movement of the fingers is important—another argument in favour of the use of the Bunyan bag. The nursing difficulties are greatly lessened, he finds, when the Bunyan bag is used because the patient can be moved painlessly. In treating burnt hands, the forearm should be slung. Resting the hand on a pillow encourages deformity. In Dupuytren's contracture, and in burns, the important question is: has skin been lost? If so it should be replaced by a graft. He wondered whether any operation on fixed finger joints was worth while, and he thought that the value of cineplastic amputations should be reinvestigated.

Mr. G. H. STEVENSON thought shortage of material would prevent the wide application of the Bunyan bag treatment. A short arm bag would be economical, and electrolytic sodium hypochlorite could be manufactured in hospital. He was not satisfied that the ideal first-aid treatment for a burn had yet been found, but thought we might go back to an oily solution. He had had good results by grafting skin on the end of a denuded terminal phalanx, but not much success in repairing flexor tendons in the hand. He was strongly opposed to the treatment of hand and finger injuries in a septic casualty department. All patients with these injuries should be admitted; they ranked in urgency with fractured femurs. Surgeon Rear-Admiral G. GORDON-TAYLOR said many burns had been treated by tanning. It was not generally realised how many patients had at times to be given their first treatment by one doctor who, perforce, chose the quickest and simplest treatment He deprecated the modern view that cut tendons should not be immediately sutured —Mr IRWIN in reply said he had himself had the two flexor tendons of the index finger sutured two weeks after they had been cut The result was excellent He always used to advocate immediate suture of cut tendons, but after reviewing his cases he decided to suture later , and his results since had greatly improved He advocated the Bunyan bag as first-aid treatment Lengthening fingers with bone grafts covered with grafted skin was rarely worth attempting because a finger was very little use unless it possessed delicate sensitivity In repairing tendons he had successfully grafted extensor tendons, but had failed with flexor tendons

MEDICINE AND THE LAW

Mistaken Diagnosis of Pregnancy

ENTERING judgment in Megarry *v* Vernon on the basis of an agreed settlement, Mr Justice Norman Birkett observed that, if he had any sympathy in the case, it was equally divided Miss Megarry, aged 44, had offered her services to the WAAF and, during medical examination, had been told that she had a fibroid growth She was advised that a good gynæcologist could remove it and that she could then offer her services again She went into hospital, taking with her a note from her panel doctor and another from the WAAF doctors The experienced surgeon who prepared to operate found, on opening the abdomen, what looked like a typical pregnant uterus After consulting his colleagues, he closed the abdomen without completing the operation It is by no means unknown to him (as to others) that women desirous of terminating an unwanted pregnancy sometimes exploit a surgeon by having an operation in such circumstances as these He told the patient next day of his conclusion She indignantly denied the allegation Later there was an interview with the patient's brother, a medical practitioner, at which the surgeon repeated his view that the patient was 4½ months pregnant in spite of her denials Further examination and a first and second Friedman test showed that the diagnosis was mistaken The surgeon expressed his regrets to the patient for his error, but, not unnaturally, he failed to conciliate her He had attacked her chastity, and she sued him for damages both for negligence in his diagnosis and for slander of a most serious kind The defendant denied the negligence and the slander and, in respect of the latter, pleaded privilege

At the trial Miss Megarry gave evidence bearing out her claim She said she asked the surgeon to record his mistake in writing, but he refused Expert evidence followed on her behalf Next morning, after the defendant surgeon had been in the witness-box for an hour, and before his colleagues and his own medical experts had been heard, the plaintiff's advisers initiated a settlement which was obviously a proper ending to the case The court was thus deprived of an interesting argument on the issue of privilege wherein it would seem that the defendant should have succeeded On the issue of negligence in diagnosis plaintiff's counsel had insisted that it was perfectly easy, when the abdomen was opened, for a surgeon to detect whether he was dealing with a fibroid or a pregnancy The defendant's case was that he made no examination *per vaginam* because this is not the common practice with an unmarried woman He did not feel justified in taking the uterus out of the abdominal cavity for more detailed examination because this would have meant a larger incision and possible disturbance to the supposed pregnancy He was evidently until his mistake was established, convinced of the correctness of his diagnosis , this involved the assumption of wilful deceit and the danger of his being made a party to an illegal operation

Diagnosis of pregnancy is not so absolutely certain a matter as patients may suppose Both the Aschheim-Zondek test and the Friedman test have their margin of error, however small Even with X-ray examination the radiogram may be misread or may not disclose the true condition The uncertainty is all the more reason for not telling a patient definitely that she is pregnant unless she has admitted the fact , it is wiser to regard case as one of mere suspicion Doubtless the defen in the recent unfortunate case would now be ready to acknowledge that he committed not only a mistake his professional judgment but also an indiscretion in firmness with which he maintained his mistaken His experience may be of value to others in a position

In England Now

A Running Commentary by Peripatetic Correspondents

I WELL remember my disappointment when Eddington first made his pronouncement that, for the one home of life in the Universe, Nature had scattered a million useless barren stars in space I had always hoped that life might be more widely spread than that The universe seemed hardly worth running if so little of it could house life , for human reason almost demands that life is the only thing for which it is worth while to run a universe at all But the depression produced by reading Eddington was as nothing to the utter hopelessness engendered by Jeans , for Jeans has declared that the home of life in the universe is as " a millionth part of a grain of sand out of all the sea-sand in the world " Yet, in the end, it was Jeans who cured my depression , for his statement was so dramatic that it made me think I began to recall the endless miles of sandy beaches on which I had roamed in various parts of the world, and I thought how wonderful it was that Jeans, who had never even seen all these and the thousand more besides, should have any definite idea how much sea-sand there was in the whole world And on this a great assurance came to me, for I realised that, in truth, he had no idea at all It is quite beyond the bounds of possibility that any human being, no matter how clever he may be, could give even the roughest approximation of an estimate of how much sea-sand there is in the world I am quite sure Jeans could not even pretend to make a guess at it The statement, I concluded, carries no more authority than would be implied in the dictum of the gardener's boy as to the number of blades of grass there were in the world What then is the use of dragging in " a millionth part of a grain " as though the matter were being dealt with by methods of great mathematical precision? After considering these things I became as the savage who, having accepted the story of Jonah and the whale as a sacred verity when it was taught to him by the missionary, was subsequently instructed in the doctrine of the immaculate conception This he was quite unable to believe and, after thinking the matter over, said to the missionary " If that woman had been my wife I would have killed her , I don't believe it , and, now I come to think of it, I don't believe the story of the big fish either " Frankly, the " millionth part of a grain of sand out of all the sea-sand in the world " story has made me bold to say that I don't believe it and that I don't believe the " one in a million " story either To my great relief, it is now possible to fall back on the more recent dictum of the president of the British Astronomical Association that, by the law of probability, " amid the vastness of the universe life is widely diffused " This, in itself, is a welcome relief, but for my present line of thought there is more interest in the matter than that conveyed in these comfortable words Dr Davidson sees in Mars a place " where conditions prevail that will probably prevail in thousands of millions of years from now on our Earth, when most of the atmosphere will have disappeared and probably most of the animal life " Evidently Mars has been through its troubles, life is passing into a steady decline and the only possibility is that, though " there is no reason why vegetable life should not exist," animal life has passed On Earth our troubles are with us there is no need to remind anyone of that But things are very different with Venus " In hundreds of millions of years from now it is possible that Venus will be the abode of higher forms of life, though it is impossible to say whether their development will resemble that which took place on the Earth " Venus has all its troubles ahead and they lie well in the future There have been many who have thought it would be a great achievement of science if we could one day communicate with Mars I have no interest whatever in the possibility of imunicating with Mars. Whatever form they may have taken its troubles are all done with. But I certainly think that someone should try to communicate with Venus. Anyhow we *do* know what has happened to us on Earth. We can all realise the disaster that occurred when evolution took the foolish turning that ended in the emergence of man from a decent "lower mammal." Someone should warn Venus before it is too late. We do not want a beautiful planet like that to be ruined if we can avoid it. It is surely enough that we should ruin our own.

* * *

It has been my good fortune to sail in all sorts of craft, ranging in size from half deckers to large schooners. I have cruised, I have raced but always there has been something missing. Something which now that I have at last attained it, has made me realise that R. M. Ballantyne was not entirely in the realms of phantasy when writing of coral beaches fringed with palms and sapphire blue seas on which schooners made their way.

All this from having to visit British Honduras. This country lacks adequate communications though active measures are now being taken to improve them and of necessity much of the traffic is carried on the rivers or along the coastal waters sheltered by a fringe of islands called cays. These cays which are typical tropical islands, range in area from a few acres to a square mile or so. One trip down the coast scheduled for me would normally be made in a motor boat a hot and often smelly journey occupying a considerable part of a day and the same on the return journey but my host, whose kindness and originality I can never praise enough, arranged a passage for us in the handsome schooner of about twenty tons belonging to a well-known naturalist. Never has any excursion steamer left Tower Pier with a more light-hearted ship's company than did ours on the brilliant early morning we left Belize. The vessel had a crew of three Bay Islanders. Originally these islanders were British colonists along part of what is now the Honduras Republic. Now citizens of that country, they remain British in outlook and English is their language.

On a spinner over the counter we caught fish of a size that more than answered the fisherman's prayer. I can recommend for luncheon grilled kabala steaks the colour reminiscent of salmon and the flavour well! Inhabitants of most British territories bordering the Caribbean have, tragically enough, to eat salt fish imported from the North American coast rather than the fresh food provided on the spot. Our work ashore completed left us with an hour or two of light to reach the cay where we planned to spend the night, and we lazed between the islands steering by the appearance of the white sea bottom, many feet below us, easily seen through the gin-clear water. Finally, we arrived at our anchorage and were all quickly over the ship's side to bathe in the Caribbean, which if once sampled, spoils you completely for bathing anywhere else in the world. An idle evening was spent on deck under the bright tropical sky, our only regret being the deteriorating news of the Japanese advance towards Singapore. The wireless-set may or may not have been a boon that night, but it did at least tell us the worst. It was a crime to go to sleep, but the effects of a day such as had passed could not be delayed. We settled down to eight hours of the best.

With full daylight it was possible to take stock of our surroundings in greater detail than on the previous evening. The schooner lay in a bay about a quarter of a mile from the shore sheltered on the weather side by small cays. Ashore could be seen some of the few inhabitants moving around their lotus island while we on board wished the clock would stand still so that we could relax and enjoy the golden hours. But there was more work to be done, so after another exotic bathe and breakfast it was up-anchor and away.

* * *

The ripening of the apples in my garden was the signal for a more than usually severe outbreak of petty larceny; for in addition to the usual small boy to whom stolen fruit tastes sweetest the more dangerous type of thief who steals to sell in the black market has invaded my privacy. The worst feature of the work of these scoundrels is that having dared their youthful acquaintances to accompany them into forbidden territory at the first alarm their cry is "Devil tak' the hindmost." The result is that the relatively innocent smaller boys are caught while the real criminals by virtue of their superior agility escape the retribution which should justly befall them. There have, however, been so many raids on my orchard of late that it has become necessary in the interests of my fruit trees, if for no other reason to make an example of the first available scapegoats. Two wretches who invaded the sacred precincts last night were misguided enough to climb too high in the tree to make a timely retreat and instead attempted to hide in the upper branches. When spotted they apparently appreciated the hopelessness of their position and surrendered promptly. According to the best traditions of the Force I began my examination by asking for names and addresses. Without a moment's hesitation the younger of the two ragamuffins gave my own name and indicated an abode in a nefarious quarter of the town. I told him that he was little credit to a good name but as I could not persuade him to alter it, had to pass over his offence for the time being. The other scamp found some difficulty in deciding whether he was called Robert or Bobby but as it proved later that his real name was William he had cause enough for uncertainty. There had been a third rascal with them, so they said whose name was extremely appropriate; he was called Robbing and like Judas of old had had the bag which was half full of fruit when he absconded leaving them to face the music. From their willingness to give information about him I suspect that they knew that he had left them to their fate without doing much to help them. Some further inquiry revealed that one of our two captives was a hardened sinner. He admitted a previous conviction for "selling" wood as he called it, without thinking it necessary to tell me that theft of the wood was a necessary preliminary to its sale. When asked why he thought I had taken him into custody and why I would presently turn him over to the police he said that he had been "eating" apples. I suppose such an evasive turn of mind indicates that the child is psychologically abnormal but the theft of a few apples scarcely seem to justify his incarceration in Broadmoor as a criminal lunatic. In due course a sergeant and a constable arrived a notebook was produced and in it were entered the particulars which I had elicited, together with my own name, address occupation and to my annoyance, my age. I often used to wonder why every report of court proceedings ran on this wise, "John Smith (59) of 19 Apple Row, Orchardston, a seedmaker by occupation, was charged with stealing sugar." It is plain to me now. No policeman worth his salt regards the description of one of his fellows be he witness prisoner or mere suspect as complete without all those particulars. I, however dislike publicity to be given to the fact that I am entitled to an old age pension and consider that as a gesture to public opinion the ages of all parties involved in prosecution might well be given. The press report already quoted would then read, "At Rhimie High Court today, before Sheriff Whalley (99) of 'The Weasles,' Stotley, John Smith (59) of 19 Apple Row Orchardston, was charged with stealing sugar. Constable A. McNabbem (67½) of the local police force *deponed* that ..."

Our youthful criminals answered with creditable self possession the sergeant's questions, and mercifully neither burst into tears during the examination. By some mischance the booty which I had forced the scamps to disgorge was lying close by on a side table where it caught the eye of the youthful budding Sherlock Holmes who accompanied the sergeant and before I realised what was happening it had been impounded as evidence and, in addition, I had to give them my wife's last brown paper bag in which to remove it. It appears that these two miscreants will appear in court in about six weeks time. As I have never known these apples to keep for more than a month after being pulled from the tree I tremble to think what horrid sticky mess will be produced from that paper bag on the dies iræ. It appears too that I may have to lose a morning's work to give the evidence which will secure the conviction of my two scapegoats. The price which I am being asked to pay for a little peace is heavy, and it would have been far less trouble to turn them over to their own parents for correction.

That article on lid-retraction in the *Lancet* of Oct 3 intrigued me What is this state of staring anxious surprise? Surely it is a defence mechanism Not only is the visual field increased—at least mine is—and its periphery more illuminated, but it is also the most delicate method of detecting the direction of the wind If you go out of doors, especially on a cold day, and stare violently the windward part of your recently uncovered conjunctiva smarts, when you face the wind for some reason it doesn't If you watch a boy suddenly smelling wood smoke, his eyes slightly stare, the head rotates and goes backwards, the nostrils dilate and more conjunctiva is uncovered It is the method of getting "centre" to the wind's bowling Why is it important? Because if our noses were half as efficient as those of the fathers of our phylum or our fox-terrier's, of whose turbinates I am reminded every time I eat a cake of shredded wheat, we should know what was moving within a hundred yards of us upwind What's more, binaural directional hearing cannot function properly unless the error of the wind is obviated by facing it Anyone who has watched dogs hunting or deer feeding, to take examples from our brother mammals only, will realise the overriding importance of the wind to them The nose is the enemy, food, water, path and mate detector, especially at night, and the uncovered conjunctiva is its invaluable assistant I know a lot of people snort at this sort of thing They remind me of a nouveau riche O no, I was never a slightly unscrupulous manager A scheming clerk? Don't be silly A nasty little office-boy? Ridiculous! I was always as I am now, big, prosperous, pot-bellied, smelling of cigar smoke, gold chain, powerful, omniscient Yes, staring is a defence mechanism developed probably not so much for individual protection as for tribal protection, for the punishment on the individual would not have been so constant and reforming And it is a nicely graduated mechanism The wide-eyed children need it most and it is correlated in them with better directional hearing (who sees the aeroplane first?), keener smell (a lot of children know their masters and mistresses by smell) and acuter taste ("I can't tell the difference between sugar and saccharin *this* war") The day-dreamer is another who needs some limited measure of its protection Why in Graves's disease the autonomic interprets some internal poison as an external threat, an "alert," just as in asthma, she interprets it as a respiratory invasion, is fairly clear For millions of years those were the common if not the only threats, and she is as much automatic as autonomic ("She" because of her motherliness, contrariness, immunity to argument and sense of humour How she would chuckle at a term like "conditioned reflex")

Modern medicine is so taken up with "how" that it often forgets to ask "why?" We've got to the small boy's pull-the-watch-to-pieces stage, or it's possibly a reaction from the false and facile assumptions in the post-Darwinian period, of which this little essay may not be entirely innocent

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FACIAL HEMIATROPHY

L Zeno reports a case of facial hemiatrophy successfully treated by means of free fat-grafts (*Ann Cir Argentine*, 1942, 8, 52) A boy of ten years had received a blow on the right side of the face when fighting another child two years before, and atrophy of that side followed The atrophic changes affected chiefly the subcutaneous fatty tissue, but the skin was also involved, with diminished sense of pain and of secretion of sweat and sebum The child's mental state had suffered from the effects of the deformity, he was timid and shrinking and ashamed to show his face to strangers An incision was made in front of the ear, parallel to the posterior border of the ramus of the mandible, and with Mayo's scissors the subcutaneous tissue of the cheek was split so as to form a bed for the graft A second incision in the nasolabial fold enabled a similar bed to be formed in the upper lip, which had to be freed from the underlying muscle in order to bring down the angle to the level of the opposite side Through these two incisions free fat-grafts obtained from the gluteal region were insinuated with forceps The skin wounds were closed and pressure was applied by a plaster cast fixed over the head with a bandage Recovery was uneventful, the cosmetic result was excellent, and the boy's mental state was greatly improved

Letters to the Editor

COMFREY, MAGGOTS AND UREA

SIR,—One of the nurses in a neighbouring village asked me, a fortnight ago, if I knew of anything that would help a poor old woman suffering from a chronic ulcer on her leg I gave her some comfrey (powdered root) wherewith to make a dressing and a little bottle of allantoin wherewith to reinforce it I had a message yesterday informing me that the ulcer is practically healed I am disposed to think that it is best to use the comfrey preparation because, as in others of the simple remedies, the natural allantoin is dextro-rotatory whereas synthetic allantoin may become lævo-rotatory if the crystals are old and have been exposed to the air

Cheltenham CHARLES J MACALISTER

SIR,—Your annotation seems to imply that allantoin in general, and allantoin admixed with sulphanilamide in particular, is of no proven value After an extended trial of the latter, I am opposed to this view The results I have obtained in using it in conjunction with cotton suture and ligature material in nearly 1000 cases compel me not to allow this implication to go unchallenged

Harley Street, W1 HAMILTON BAILEY

COMPLEMENT FIXATION IN TYPHUS FEVER GROUP

SIR,—Your annotation of Oct 10 contains a number of incorrect statements, which should not be allowed to pass unchecked

1 The statement is made that, since the clinical differentiation between typhus and Rocky Mountain spotted fever is very difficult, "the only means of diagnosis in the past has been the inoculation of guineapigs with blood from the patient immediately it has been withdrawn" The foremost expert on Rocky Mountain spotted fever, Dr R R Parker, director of the Rocky Mountain Laboratory, Hamilton, Montana, not long ago defined the position quite differently He says (*J Amer med Ass* 1938, **110**, 1275), "The three tests ordinarily used are the infection test, the Weil Felix reaction and the protection, or virus neutralisation, test" "On the whole the most useful and practical test is the Weil Felix reaction, that is, the test of the patient's serum for agglutinins against O strains of *Proteus X19* and *X2*" The serum of some patients with Rocky Mountain spotted fever reacts only with *Proteus OX2*, or shows a higher agglutinin titre for *OX2* than for *OX19* Either of these results confirms the diagnosis and at the same time excludes that of typhus fever When, on the other hand, the predominant agglutinins are of the *OX19* type, a differential diagnosis as between the two diseases cannot be made Davis and Parker (*Publ Hlth Rep Wash* 1938, 53, 1526) showed that both the *OX19* and the *OX2* antigens are essential components of the O antigen of the rickettsia of Rocky Mountain spotted fever In the annotation, however, the existence of the *Proteus OX2* type is not mentioned

2 Bengtson and Topping (*Amer J publ Hlth*, 1942, 32, 48), whose paper is the subject of the annotation, did not employ *Proteus OX2* antigen in their agglutination tests The "Weil Felix titres" recorded in their tables and figures refer solely to agglutination of *Proteus OX19*, and cannot therefore be accepted as an adequate statement of the agglutinative properties of the sera they tested Nevertheless Bengtson and Topping give a clear account of the relative usefulness and the limitations of the two reactions they employed—namely, complement fixation with typhus rickettsiæ and agglutination with *Proteus OX19* They showed that the complement fixation test is the better criterion of past infection with endemic typhus, whereas the *OX19* reaction is the more useful test in early diagnosis The annotation, however, does not mention the latter fact, and, moreover, it gives an inaccurate summary of the results Bengtson and Topping obtained with the complement fixation test in cases of Rocky Mountain spotted fever Thus a note is made of their table 4 which shows that the sera from 14 cases of Rocky Mountain spotted fever gave no cross fixation with typhus rickettsiæ, but no mention is made of table 5 which shows 8 cases in which there was cross fixation Bengtson and Topping rightly concluded that "the question of the best method for the early diagnosis and the differentiation between typhus and Rocky Mountain spotted fever is one which cannot

be answered completely at the present time " In the annotation, however, Bengtson and Topping are said to have demonstrated that the complement fixation test " will clearly differentiate between endemic typhus and Rocky Mountain spotted fever " Incidentally Bengtson's name is spelt wrongly throughout the annotation

3 Having thus exaggerated the value of the complement-fixation test with rickettsial antigens the annotation proceeds as follows " Though more or less specific for the typhus group of fevers, the Weil Felix reaction being an indirect test has never been happily accepted by many workers These new antigens may give us a simple inexpensive direct test for diagnosing this group of diseases " Your readers may compare this sweeping statement with the following quotation from a review by Zinsser (*Amer J Hyg* 1937, 25, 451), who devoted the last ten years of his life to the study of typhus fever " The so called ' Weil Felix reaction ' has attained extraordinary importance in the diagnosis of typhus fever and considerable significance for the differentiation of the several groups of Rickettsia infection The three most important varieties of proteus bacilli in use at the present time are those known as OX19, OX2 and OXK "

It is well established that the position of the Weil-Felix reaction as a diagnostic test for typhus fever is in some respects better than that of the classical serodiagnostic method—the Widal test in typhoid fever There is, admittedly, still plenty of room for improvement in the serology of the typhus group of fevers Advances may be expected from the adoption of methods similar to those now in use in the serum diagnosis of the enteric fevers These, it is known, are based on the separate estimation of the antibodies that correspond to the different kinds of antigen possessed by typhoid and paratyphoid bacilli Rickettsiæ, too, are complex antigenically (Castaneda and Zia, *J exp Med* 1933, 58, 55) The heat-stable O antigens of rickettsiæ are available in the most convenient form in the three types of *Proteus X* What is needed are suitably prepared reagents for the demonstration of the antibodies to the heat-labile rickettsial antigens These will supplement rather than replace the *Proteus* OX antigens

Emergency Public Health
Laboratory Service A FELIX

*** No-one doubts that the Weil-Felix reaction has been of great value in the past and probably will be in the future, especially in the hands of particular individuals The purpose of the annotation was to stress the desire for and the possibilities of a relatively simple biologically specific reaction for widespread use, which all will agree is to be preferred at any time to a concomitant reaction, one recent example of the non-specificity of the latter being the observation that certain experimental animals inoculated with clean strains of *Spirillum minus* develop agglutinins for the OXK strain of *Proteus* in much higher titre than after infection with *Rickettsia orientalis* —ED L

MECHANISM OF CONVULSIVE THERAPY

SIR,—The originators of insulin therapy and of ' Cardiazol ' or convulsive therapy got their names transposed in your annotation of Oct 31 (p 520), this, of course, was a mere slip of the pen The statement, however, that " convulsive therapy and particularly electric shock " is to be preferred in such and such a psychosis, is open to misinterpretation, since they are one and the same treatment, electrical shock being nothing but a technical modification of Meduna's convulsive therapy He first used camphorated oil for producing the convulsion when introducing it in 1934, and later cardiazol The next technical improvement was the substitution for cardiazol of ' Triazol ' by Walk and Mayer-Gross in 1938, and in the same year Cerletti and Bini replaced injection by electrical stimulation of the cortex These historical facts are not important, but it should be more widely known that the therapeutic effects of this electrical modification, all too easy to carry out with the foolproof apparatus, are in no wise superior to those obtained by cardiazol or triazol, in fact, it is to be feared that ultimately they may prove to be inferior, since their consolidation by means of psychotherapy is becoming neglected, the patients being more and more left to themselves between treatments

Cornwall H PULLAR-STRECKER

RICKETS IN THE BREAST-FED BABY

SIR,—I am glad to see it stressed in your leader of Oct 10 that the pregnant and nursing mother should drink her daily pint of milk and should also have adequate vitamin D Thus sufficient vitamin D should be ensured in her breast milk for baby's needs—surely better than giving the baby some form of vitamin D in addition to his natural food, and thus upsetting the perfect balance of his diet ? Certainly the synthetic form of vitamin D is more desirable than cod-liver oil for obvious digestive reasons If cod-liver oil is used then the Government compound is to be chosen since much less need be given Halibut-liver oil is in the same way suitable since one drop of this, we are told, is equivalent to one teaspoon of pure cod-liver oil in its vitamin content My experience with a good many normal breast-fed babies who have been given the compound (or halibut-liver oil drops) is that slight sickness resulted or the stools became relaxed and perhaps frequent, or that both these conditions occurred On comparing foods available now with those of prewar days, I cannot see that we need seriously lack in any way Our margarine has been reinforced with vitamins equivalent to butter standard, and the ration of this is sufficient Eggs, although today they are less plentiful, have previously been available to most mothers with priority claims Meat has never been considered a good source of vitamin D It seems reasonable that the fats and milk, together with fish-liver oil taken by the average mother, will ensure ample of the antirachitic vitamin in her milk, and her fully breast-fed child should not even now need an extra addition any more than he did before the war

The Nursery World E MORRISON

MASKED HYPERTHYROIDISM

SIR,—Your leading article of Oct 31 is to be welcomed *as a sign that thyrotoxicosis is becoming increasingly* recognised as a mosaic of symptoms, of which hypermetabolism is only one constituent fragment Your observation that we lack any simple means of measuring thyroid function other than by the indirect means of the BMR, indicates a major difficulty both in research and clinical work Far too much attention has been paid to the BMR in the past as an index of severity of, and standard of comparison between, cases of thyrotoxicosis, and most clinicians now rely very little on it The work of Hinton and his associates, which you quote as suggesting a separation between hyperthyroidism and hypermetabolism, is a step in the right direction, and may end a deadlock which has so long existed in investigation of thyrotoxicosis Such a separation would be complementary to the work of Dodds and Robertson (*Lancet*, 1933, ii, 1137 and 1197), who separated hypometabolism from hypothyroidism They raised the BMR of a patient with myxœdema to + 30% by administering dinitro-*o*-cresol, but without relief of symptoms, yet with thyroid extract symptoms were relieved at a BMR of + 10%

It would be a major advance if some substance could be found capable of lowering the BMR in thyrotoxicosis without ameliorating the hyperthyroidism—such as occurs with iodine It is also to be hoped that future researches on thyrotoxicosis will not be concentrated entirely on the thyroid gland, to the neglect of the soil in which the disease flourishes—namely, the constitutional make-up of the patient

Cambridge LAURENCE MARTIN

NICOTINIC ACID FOR ANGINA PECTORIS ?

SIR,—I think we should differentiate between the immediate transitory effects and the lasting effects of nicotinic acid Its immediate effect is to relax spasm As regards the lasting effects, many patients suffering from heart troubles show constipation, defective absorption of nutriment and increased production of indole. C P Rhoads of New York demonstrated that indole impaired the utilisation of vitamin B (*J Amer med Ass* 1939, *113*, 297) whose constituents are components of several enzymes and ferments Nicotinamide, is an important part of co-zymase of von Euler-Chelpin and of Warburg's co-ferment, thiamine pyrophosphorylate is an essential part of co-carboxylase, riboflavin phosphorylate attached to a special protein is the yellow

University of Cambridge

On Oct 31 the degrees of MB, BChir were conferred on R M Stuart Matthews

Association of Anæsthetists of Great Britain and Ireland

The following officers have been elected by this society for the ensuing year president, Lieut -Colonel Ashley Daly, vice president, Dr C F Hadfield, treasurer, Dr Z Mennell, and secretary, Dr A D Marston

Appointments

FOY, HUMPHREY, MRCS, DMRE visiting radiologist to the Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry

KINNEAR, JOHN, MD ST AND, MRCPE workmen's compensation referee for dermatitis for Cupar, Arbroath, Dunblane, Dundee, Forfar and Perth

Births, Marriages and Deaths

BIRTHS

CARTER —On Oct 25 at Castlederg, co Tyrone, the wife of Surgeon Lieutenant D M F Carter, RNVR—a son

KERSHAW —On Nov 1 at Leamington Spa, the wife of Surgeon-Lieutenant G R Kershaw RNVR—a son

MARSHALL —On Nov 3, at Carshalton, the wife of Dr T S Marshall —a son

MATHIAS —On Nov 4, at Aberystwyth, the wife of Dr J Gordon Mathias—a son

MOORE —On Nov 9, in London, the wife of Mr A M A Moore, FRCS—a daughter

THOMSON —On Oct 27, the wife of Dr E J Thomson, of Grimsby—a son

WILLIAMS —On Nov 4 at Oxford, to Dr Joy Williams (*née* Jewson) wife of Squadron Leader Denis Williams, MD RAFVR—a son

MARRIAGES

BINNING—McKECHNIE —On Nov 7 at Northwood John Sydney Binning, MB, captain RAMC, to Patience Mary McKechnie

COMPSTON—STANDISH —On Nov 7, at St Peter's, Vere Street, Nigel Dean Compston, MRCP to Diana Mary Standish

STRADLING—SNOW —On Oct 31, at Exeter, Peter Stradling, LRCP, to Peggy Snow, LRCP

VERE HODGE—BUDGEN —On Nov 7, in London, Nicholas Vere Hodge, FRCS, squadron leader RAFVR, to Ann Budgen

WALKER—KITWOOD —On Oct 29, at Boston, Lincolnshire, Gerald Walker, MRCS, to Lyndis Margaret Elizabeth Kitwood

DEATHS

BELL —On Nov 3, at Netley, Delvine Bell, MC, MB EDIN, lieut-colonel RAMC of Denewood, Rustington Sussex

GOWLLAND —On Nov 1 at The Star and Garter Home Richmond Edward Lake Gowlland, DSO, TD, MB LOND, lieut colonel RAMC, aged 65

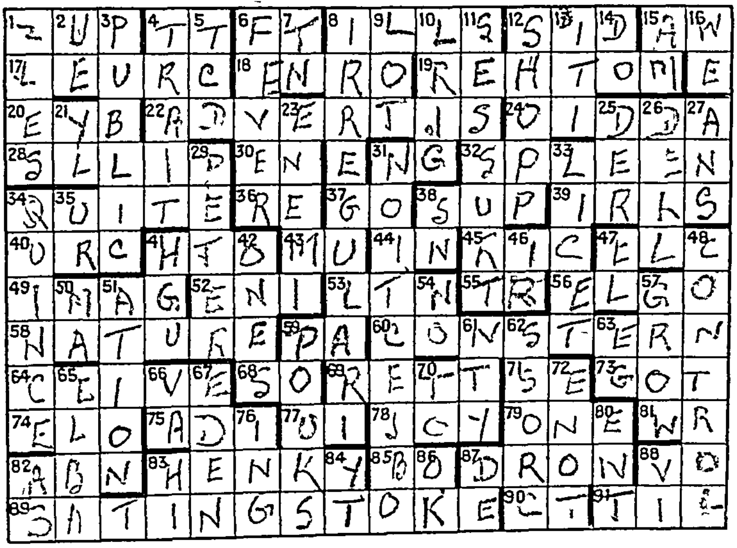
HOGG —On Nov 5 at Poona, William Peat Hogg, MC, MB ABERD, DTM&H lieut colonel IMS

INCE —On Nov 7, at Sturry, Kent, Arthur Godfrey Ince, FRCS

MARTIN —On Nov 1, at Bath, Henry Meredith Martin, M CH DUBL, FRCS

PIRRET —On Nov 1, Mary Janet Pirret, MD GLASG, DPH, of West Cromwell Road, SW5

WALKER —On Nov 7, at Balerno, Sir Norman Walker, MD EDIN, LLD, FRCPE, aged 80



New EMS Hospital in Wales

On Nov 3 the Minister of Health opened the 600 bed Merriston Hospital, near Swansea, which has been built at a cost of £180,000 under the Emergency Hospital Scheme Until heavier emergency demands arise, five wards, with 200 beds, are being placed at the disposal of the Welsh National Memorial Association for tuberculosis cases The hospital will also be used to relieve the pressure on the Swansea and General Eye Hospital

Tuberculosis Association

A meeting of this society will be held at 26, Portland Place, London, W1, on Friday, Nov 20, at 2 45 PM, when Dr Clifford Hoyle, Dr W C Fowler and Mr R C Brock will open a discussion on the treatment of tuberculous pyothorax

LANCET CROSSWORD

SIR,—When (19rev)s of (57/76) (10rev)s meet out (12dn/76) and discuss where the very best (62rev/87ac rev) (1ac rev/1dn) are (70) be (73), (79) is sure to (88ac rev/36rev)hear it said,—" (16) always (37) to Mr (29) (34dn) for ours You can always (36/21rev) (54rev) his to be (34ac) free from all (31dn rev/65rev) (22/76) (15dn rev/69rev) " (49/52rev) the (60/51) in these (45rev/47ac rev)s, (63rev/53rev/36rev) than the (42) you frequent, my (37/14rev) sir, (16/36) I to employ my (43/71) in (38ac rev/83dn/31ac) Tom and Dick's (11rev), (83ac)'s (8dn/84rev) (28rev), or even a *Lancet* (3/51)! What (82ac/63/51) of high principles (18/70rev/87dn rev) in my (58)! How (25rev/74rev/7rev) of commerce! How my (23/71rev) would have triumphed!

Actually Margaret, my (43/71), was so (81/41ac rev) at the slightest (83dn/7rev) that the (59ac/46) of us might accept the (25/37rev/51) that she (15ac rev/26rev) out (54rev) me without as much as " (37/14rev/20rev)," but (43/4ac/36rev/76)—as she always (14/71rev) when (12ac rev/4dn)—, " Oh, (14/7rev) (87dn/64) yourself!" She was a (37/14rev) (70/41dn rev) (43/71)—she came from the (43/71/43rev) at (5)—though " suffering much from (32) and (66/59dn) " and (41ac rev/36rev) similar (8ac) Unfortunately I had had to (89) her rather (17rev/21rev) that very morning because she would (56rev) a (9) of (35rev/87) (82dn)s who shouted (40rev/87dn) remarks on the (12ac rev/59ac/46rev/84rev) in our ages (68) now, thanks to you, sir, I am in the un(30/88dn/65rev) position of having (54) (43/71) It (39) me not a little —to employ a (91rev/70rev/71rev)

As you yourself (47dn rev/7rev) a (87dn/6ac) hand in (87dn rev/13/31ac) this (85ac/86), you cannot very well (36/88dn/16rev) it in your columns A pity, I should have (34ac) (30/78/87dn rev) (81/13/31ac) a (59ac/63rev) or (68) of highly (87dn/47dn rev/90/65rev) prose—and incidentally (30/45/83dn/31ac) the (72rev) of your (3/51), instead of all this (54/38dn rev/30/71) where I have with considerable (76/30/77/84rev) to (44/71/55rev) awkward words, (88dn/87dn 33) " (88dn/87dn 33)," and quotations, (63) " This (41ac rev/36rev) (67), demi-Paradise," without (12ac rev/70/55rev/76) the theme too much, but with (79rev/41dn rev) double-(62rev/76) (55/59ac rev)s to (27rev/36) and delude the poor (85ac/85ac rev)s who fall for that (68/55 rev) of thing

You (82dn rev/87dn) me (87dn/88dn/71) a (62 rev/87ac rev) about " (48) of the Common (6dn)s " Well, you are not (63 rev/4ac/76) (79) from me My (31dn rev)s (70) (14/76) it are (44/38ac/36rev/65rev) The (85ac/86) and its (80rev/61/79) authors are too (37/14rev) to be taken (44) (66/44), and the (3) will be a (43/4ac) if it doesn't (38dn/59ac rev) up the entire (87dn rev/13/54rev) anyhow

(75/2rev) and likewise (24ac rev)
(29) (34dn)

*** We invited Mr Quince to contribute a crossword, taking as his theme a recent *Lancet* publication Mr Quince, who as everyone knows is apt to call a spade " a black-suited worker," wrote to refuse in the above harsh terms The solution will appear in a fortnight's time when we will have had an opportunity to find out what he really did say

SELECTION OF ARMY PERSONNEL·
DEVELOPMENT OF THE DSP

CHARLES S MYERS, M D CAMB, F R S

THE Directorate of Selection of Personnel was nstituted in the British Army in the early summer of 941, under the immediate control of the Adjutant-General Its work had been foreshadowed about a year before, when the Army Council decided to introduce election tests into units receiving intakes of recruits This initial phase was entrusted to the director of military raining, who appointed as his adviser a civilian (later aided by 3 assistants) to devise and to arrange for the application of a 20 min test in the various training regiments for artillery, engineers, ASC, armoured corps, nfantry, &c , throughout the country Separate, but imilar, arrangements were also in force for the testing of recruits in training regiments for anti-aircraft duties One great disadvantage of this scheme was the length of time needed to transfer an unsuitably allocated recruit from one arm of the Service to another and to procure the discharge of a recruit found unfit owing to lack of ntelligence or mental instability, for any kind of Army work. In contrast to the practice obtaining in the Navy and in the Royal Air Force, it had been laid down by Parliament that no man could be deemed enlisted until he had been posted by the Ministry of Labour to one arm of the Service (and to its training regiment), after his attendance at one of that Ministry's recruiting centres The DSP was provided with a staff of administrative and technically qualified men and women of military rank to conduct its work

Its institution followed the receipt by the War Office of a memorandum on the selection and allocation of personnel prepared by one of the command psychiatrists of the Army medical services, and of a report from a committee of three psychologists appointed to advise him by the Adjutant-General Both the memo and the report had urged that the new directorate be established, that a non verbal test of intelligence be given to every recruit on his medical examination at the recruiting centres; that mobilisation depots be established throughout the country, to which recruits should first be sent after their attendance at the recruiting centres, and at which a more detailed psychological and psychiatric examination could be carried out *before* their allocation to any arm of the Service, that a permanent staff of non-commissioned officers be provided in the new directorate to carry out the routine application of the necessary tests, and that the directorate should be in the closest possible relation not only with the directorate of the Army medical services (concerned with the problems of Army *health*), but also with the directorates of recruiting and mobilisation and of military training (concerned with the problems of Army *personnel*)

* * *

The first work of the DSP was to select NCOs suitable for the routine work of applying selection tests Most of those chosen had been teachers in civil life and were trained by a staff of commissioned officers who were qualified and experienced in vocational psychology The next step was to introduce a well-tried non-verbal test of intelligence at the recruiting centres By January, 1942, 85% of all intakes were receiving this test in a shortened form, and by March every recruit for the Army (save in Northern Ireland), man or woman, was being thus tested A card was prepared for each recruit on which all information about him that related to personnel problems was entered, and the Hollerith system was adopted for future analysis of the data thus recorded A "job analysis" of the numerous occupations in the Army was also begun, the special mental and physical qualities being systematically ascertained which were required by each

Towards the end of 1941, an experiment was begun of using an extended selection procedure in training regiments Here men underwent tests which assessed mainly clerical, mechanical and signalling aptitudes, and also took a verbal test of intelligence The recruits filled up a form giving their past educational and other histories, interests and hobbies, and they were sympathetically interviewed by commissioned (usually regimental) officers who had been already trained for this important work Recruits of undesirably low intelligence or of doubtfully adequate mental stability were referred by these interviewing officers to the local Army psychiatrist The job analysis of Army occupations made it possible to recommend each recruit, thus tested, interviewed, and considered in the light of his past education and employment and of his present interests and hobbies, for suitable employment in his arm Potential "tradesmen" and men clearly better suited to other arms were able to be transferred early in their Army careers

This small experiment proved so encouraging that the work was gradually expanded It was succeeded in May, 1942, by a small try out of the present general service procedure in 10 units The decision was now made to allocate *all* recruits at the recruiting centres to a General Service corps, and to establish primary training centres throughout the country to which they would be directly sent before allocation to any arm of the Service These important changes came into force in July Many additional officers, commissioned and non-commissioned, were needed by the rapidly expanding DSP. The non-verbal test of intelligence was still given at the recruiting centres, in order that units linked to those arms which required the personnel of highest intelligence should have a selected intake and so reduce troop movements when they were posted Soon after, command personnel selection officers, each provided with NCO and clerical assistance, were appointed for local supervisory duty

* * *

In the selection of officers—another branch of the DSP's work—the psychiatrists have played a more dominant rôle than the psychologists For here there is less need of the discovery of appropriate mental aptitudes Apart from adequate intelligence, the essential desiderata for a good officer are qualities of character and temperament, constituting a suitable personality The vocational psychologist has always regarded tests of personality as far less reliable than those of aptitude He has depended rather on the interview for the assessment of such characteristics as honesty, industry, cooperativeness and sociability Moreover, slight degrees of mental instability or other quasi-psychopathic tendencies are much less important among "other ranks" than among officers In the summer of 1941, a War Office selection board (WOSB) was experimentally set up to improve the methods of assessing officer-candidates and so to reduce the numbers of men rejected from officer cadet training units with consequent waste of time, effort and expense At this unit, during their two or three days' stay, they were confronted by military testing officers with professional and other situations in which they had opportunities of displaying their possession or their lack of initiative, ingenuity, capacity for leadership and courage They were also subjected to psychological tests and to various psychiatric observations, many of them initially of a tentative, experimental character But such success was achieved, particularly by the situation tests and by the interviews with the psychiatrists, that in the following spring WOSBs were established in every command throughout the country Their work is largely clinical, psychiatrists, psychologists, and military testing officers live with the candidates during their stay in the unit, they discuss their independently formed verdicts in the presence of the president of the board who regards them as his technical advisers in determining the acceptability of each officer-candidate and his suitability for some particular arm of the Service

* * *

The director of the DSP, a professional soldier, has to be in intimate touch with those formulating the ever-changing requirements of the Army Though seldom given sufficient notice to allow of really thorough preparation, he has had to produce adequate numbers of the best-suited men and women needed in the various arms of the Service, and to select and train an ever-increasing staff The DSP has received the invariable support and sympathy of the present Adjutant-General It has had to spend much time in devising or adapting tests so that they are better suited to the Army's needs than any hitherto employed in civil life for vocational guidance and selection Some of those suggested have been adopted , others (e g , tests for drivers and gun-layers) have been rejected The value of these tests had to be experimentally determined within the Army before they could be applied on a wide scale Their correlations with other tests already in use has needed calculation , " factor analysis " has also usually been carried out

From the outset the DSP has established close contact with the corresponding but considerably older department in the American Army, which has generously sent to our War Office full information of its experience and methods Similar assistance has been received from those psychologists carrying out corresponding work for the Admiralty and the Royal Air Force The relations of the DSP towards the newly formed directorate of psychiatry within the Army medical services have throughout been cordial The Army psychiatrists have cooperated in all the primary training centres, in the WOSBs, and in field units The consultant psychiatrist or his director, or both, attend the meetings of the advisory committee with the War Office staff of the DSP The psychologist depends on the psychiatrist for the psychopathological examination of men who through deficient intelligence or mental instability need special placing in the Army or discharge In return, the psychologist informs the psychiatrist of the scores obtained from the intelligence test, and possibly will help to detect psychopathic conditions by the responses made to different sections of this test Regular conferences are held at the War Office between the DSP headquarters staff and the advisory committee the members of which have assisted also in several investigations and in reporting on the work at various training centres A conference with civilian psychologists, mostly in charge of university psychological laboratories throughout the country, has also been held, at which various offers of help were received and considered Some offered statistical help, others the free use of their laboratories for research The problem of selecting additional officers for the ATS was effected by liaison with the psychologists at Cambridge engaged upon the selection of specialists for anti aircraft units Contact was also established with the Medical Research Council, one of whose research workers carried out an investigation to devise the shorter form of intelligence test needed at the recruiting centres, another worked on the problem of the avoidance of traffic accidents among Army drivers Technical investigators of the Industrial Health Research Board of the MRC had early been seconded to the staff of the directorate , while the staff of the vocational guidance department of the National Institute of Industrial Psychology was depleted almost to vanishing point, to supply the urgent need for selection work in the Army and Navy Work similar to that of the DSP has been going on both in the Navy and in the RAF Altogether, it will provide sociologists and anthropologists with a valuable survey of the distribution of aptitudes among a vast number of the poulation of this country, and with data which will still be useful after the war, when those now in the fighting Services return to civil life

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TREATMENT OF BACILLARY DYSENTERY IN THE MIDDLE EAST

J W PAULLEY, M B LOND, M R C P,

FLIGHT-LIEUTENANT, RAFVR

FOR a long time purgation and still further purgation has been widely accepted as the routine treatment for bacillary dysentery There has been variation in the drugs themselves, their length of exhibition and dosage At a recent medical conference in the Middle East the general feeling was that it was better to do nothing at all for cases of bacillary dysentery than to give salines It was agreed that to dehydrate an already dehydrated patient could no longer be considered rational, and the farce of seeing such cases—which require urgent and immediate restoration of fluid intravenously—treated in this way should cease

Results in a large series of cases treated last year on " do nothing, plus fluids " lines were at least as good as those obtained at the same time in a series of saline cases [1] This tendency of most cases to get better anyway is disturbing, because in the mild form of disease (which has predominated this year) it leads to complacency The few cases which do not " do " are lost in a mass of satisfaction and quick discharges

The rationale of treatment with kaolin can be summarised as adsorption of toxins , rest for the gut , and avoidance of dehydration Bacteriophage has apparently been found unsatisfactory by most standards, although it receives recognition on the continent Large quantities of Bayer's polyvalent phage were captured in Libya Pectin and pectinates have been used particularly in the dysentery and acute infectious enteritis of children The mortality of these diseases, below the age of 3 years, remains deplorably high (they are the scourge of children's hospitals) and before the war were one of the big problems confronting municipal authorities

Marshall and his colleagues [2] published results in a series of children treated with sulphaguanidine and reviewed its action , 220 mg is soluble in 100 c cm at body temperature, and this was regarded as the level required in the gut for maximum therapeutic effect , in fact concentrations of 150–200 mg per 100 c cm are achieved by the dosage generally employed On the same dosage the blood values per 100 c cm vary between 3 and 4 mg (compare 9–10 mg sulphapyridine) The guanidine radical makes the drug sufficiently insoluble to remain in the bowel in high concentration In Marshall's 17 children, mainly with Flexner but some Sonne dysentery, 7 who were treated on or before the third day had a rapid and uninterrupted recovery , in the others the reaction was either moderate or there was no demonstrable effect There were no toxic effects, no hæmaturia and no effect on leucocytes The quantity of the drug required for treating each case is considerable, its present cost is high and stocks are limited , so that only cases giving cause for anxiety, or becoming chronic, are at present receiving sulphaguanidine in the Middle East

Reitler and Marberg [3] published results with sulphapyridine in 20 cases, all of which did well Masefield [4] described a series of cases in a Flexner epidemic He gave 1 g 4-hourly of sulphapyridine on the first day, 0 5 g 4-hourly on the second, 0 5 g 6-hourly on the third, 0 5 g three times on the fourth, and 0 5 g twice on the fifth He remarks on the excellent general condition of the patients when they were allowed up, usually about 7 days after the onset

Lieut -Colonel Buttle, who has kindly carried out in vitro experiments, can find no difference between the bacteriostatic effect of sulphaguanidine and sulphapyridine against dysenteric organisms

TREATMENTS COMPARED

The cases compared here were drawn from an area of a few square miles in the Middle East, over the period April-July, 1942 Most cases were mild , a few moderate to severe The cases in this series fall into the following groups (1) Cases on salines (plus sulphaguanidine when considered necessary) at a nearby hospital (2) Cases on sulphaguanidine at this station sick quarters (SSQa) (3) Cases on sulphapyridine at SSQa (4) Cases on sulphapyridine at Flight-Lieutenant Craib's station sick quarters (SSQb) (5) Cases on kaolin at SSQa

These patients all passed blood and mucus, and the laboratory either isolated an organism, or reported indefinite exudate (IE) or bacillary exudate (BE) on the fæces Isolation was low throughout and lower in the SSQ cases than in the hospital series Most of the organisms were Flexner, a few were Shiga, Schmitz and Sonne Personnel were all RAF, RAAF or RCAF There was no selection of cases The hospital series, which actually form the control, were men admitted either before SSQa was rendered fit to accommodate dysentery patients, or were " overflows " when the dysentery wards were full There was no question of admitting severer cases to the hospital , rather were they detained in order that the sulphonamides might be tried further Unlike many of the dysenteries from forward areas all patients in the series were seen and treated within 1 or 2 days It is thought that the groups are strictly comparable The results are summarised in table I

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[1] Lieut -Colonel Bulmer at a medical conference in the Middle East, 1942

[2] Marshall E K , Bratton A C Edwards, L B and Walker, E *Bull Johns Hopk Hosp* 1941, 68, 94

[3] Reitler, R and Marberg K *Brit med J* 1941, i 277

[4] Masefield, W G *Ibid*, 1941, ii, 199

TABLE I—FIRST SERIES FINDINGS IN FIVE COMPARABLE GROUPS

Where treated and treatment	Cases	Av blood days	Av days in bed	Remarks
SSQa Sulphapyridine	43	1 23	4 26	No failures
SSQb Sulphapyridine	30	–	4 96	No failures
SSQa Sulphaguanidine	25	2 16	5 36	2 cases given sulphapyridine, 3 others outstandingly poorer response than in any sulphapyridine case
Hospital Salines *	60		12 6	Shortest case 6 days, longest 65 days 11 cases more than 20 days
SSQa Kaolin	15	2 6	6 1	2 cases given sulphapyridine

* Plus sulphaguanidine in bad or chronic cases

1 *Hospital cases on salines (plus sulphaguanidine when necessary)*—These men were treated with castor oil and salines, the amount of salines varying with the opinion of the medical officer. There were 60 in all, of whom 11 can be regarded as being more severe, or who lapsed into a chronic state These spent more than 20 days in hospital, 1 had a Shiga, 1 a Schmitz, 2 Flexner infections, 2 BE and 5 IE Of those which cleared up without complications, 1 was a Shiga and 13 Flexners, the rest were BEs or IEs All cases of sufficient severity were given sulphaguanidine early, the others received the drug only when they began to show signs of toxicity, dehydration or chronicity (usually 7–9 days after the onset) The shortest period under medical treatment was 6 days, the longest 65 The average period in hospital was 14 6 days Since it takes about 48 hours for the discharge of a patient from hospital to go through, it has been decided to regard this as 12 6 days Further analyses cannot be made on these cases since full details are not available

2 *Cases on sulphaguanidine at SSQa*—A group of 25 patients were treated with this drug, there was no selection of cases Their average stay was 5 36 days The amount of blood they passed was assessed in half days, the total of "blood days" was worked out for each case and averaged 2 16 days per man All cases discharged were put on 2 or 3 days' light or excused duty, while their fæces were observed As the hospital recommendations were the same, this period of non effectiveness has not been taken into account Five of these patients showed an outstandingly poorer response to sulphaguanidine than any did to sulphapyridine, and in 2 of them sulphapyridine was substituted for sulphaguanidine on the fourth and fifth days In one the passage of blood was profuse, and the patient was becoming exhausted, the other was thought to be in danger of becoming chronic The improvement on sulphapyridine was immediate in both cases, and the sulphaguanidine figures benefited by this interference The average total dosage was usually about 80 g per patient, over an average of 3 or 4 days

3 *Cases on sulphapyridine at SSQa*—Treatment from the start with sulphapyridine was given to 43 patients There were no failures. All cases were put on glucose fluids initially, not less than 5 pints daily, and if motions were numerous this was increased to 7 pints a day, plus citrates In a mild case sulphapyridine, 2 g, was given at once, followed by 1 g 4-hourly for 24 hours. At the end of this time decision was made either to continue with 1 g 3 hourly, or to reduce to 1 g 4-hourly The third day was nearly always at the rate of 1 g 4-hourly Only in one or two cases was it necessary to carry on treatment to the fourth day Every effort was made to get the patients on to a light diet, and this was usually achieved by the morning of the third day, if not before, and the patients were allowed up They were well throughout and frequency of motions had nearly always ceased by the second day The total dosage averaged about 20 g per patient over 3–4 days, average stay was 4 26 days per man Average total days of pass [illegible]s 1 23

4 *Cases on sulphapyridine at SSQb*—SSQb was only 600 yards away and the epidemiology corresponded exactly with that in SSQa The dosage was slightly less than that used at SSQa and Flight Lieutenant Craib's criteria for discharge slightly different (negative culture was always awaited) He treated 30 cases The average for these patients' stay in sick quarters was 4 96 days, after which most of them returned to full duty *It is seen that this is better than the sulphaguanidine figures produced in this SSQ* He too had no failures with sulphapyridine

5 *Cases on kaolin at SSQa*—Kaolin powder was given to 15 patients in doses of 2 oz immediately, 1½ oz in 2 hours, 1½ oz after a further 2 hours, then 1 oz three times daily, total dosage varied between 12 and 18 oz In 2 cases it was necessary to interfere by substituting sulphapyridine for kaolin, in one on the seventh day, and in the other on the fifth day Both cases showed signs of drifting to a chronic state Effect of sulphapyridine was almost instantaneous, and the figures for kaolin have benefited thereby Average period in SSQa was 6 1 days Average period of passing blood was 2 6 days

SHIGA OUTBREAK

An isolated Shiga epidemic developed in one camp, during a week in July Though patients were admitted to hospital when SSQa became full, control figures provided by such hospital cases are not yet available The outbreak was vicious and, though both sulphapyridine and sulphaguanidine were found to be efficacious at SSQa the period of treatment required was generally longer than in the five groups compared above Since these Shiga cases had no controls, and were not comparable to the mild or moderate dysenteries of the first series, they could not fairly be discussed with them

The camp had had no dysentery cases for 3 months and the camp adjacent to it was not affected by the outbreak The cause was possibly a carrier in a draft of 70 men who had arrived from India about 7 days before the dysentery began There was altogether a total of 45 cases, 28 of which were treated in SSQa; 17 were sent to hospital In 13 of the cases in SSQa the Shiga bacillus was isolated, and a somewhat higher percentage of isolations of this bacillus was obtained in the hospital cases In view of the completely discrete nature of the epidemic, the number of isolations of the Shiga bacillus, the absence of other organisms, and the severity and similarity of the cases, I think this was a pure Shiga outbreak

Sulphapyridine was given to 15 cases at SSQa Total days of passing blood were assessed as in the previous series; there were 9 Shiga isolations in these cases Sulphaguanidine was given to 13 cases; there were 4 Shiga isolations The days of passing blood and in hospital are shown in table II

Criticism may be levelled at the discharge of patients with this severe infection from the wards in such a short time Under ideal conditions these patients might well have been detained in bed *for a further few days* The dominating factor was, however, accommodation, both here and in the neighbouring hospitals The procedure adopted was similar to that in the first series · cases as soon as they had been free from blood and mucus for 2–3 days were discharged to 3–4 days excused duty, complete rest, and kept under the observation of the nursing staff All their motions were observed, and for 2 days after

TABLE II—FINDINGS IN A SHIGA EPIDEMIC TREATED AT SSQa, AND IN ALL CASES TREATED PERSONALLY

Series	Treatment	Cases	Av blood days	Av days in bed	Av total dosage	Remarks
Shiga	Sulphapyridine	15	2 66	5 7	34 g	1 drug rash 1 relapse
Shiga	Sulphaguanidine	13	4 73	8 01	142 g	1 drug rash
All cases*	Sulphapyridine	63	1 74	4 8		
	Sulphaguanidine	83	2 55	5 59		

* These final figures for all cases treated by Flight Lieutenant Paulley, including the Shiga outbreak and some recent cases bring his experience up to date —Ed L

discharge a light diet was provided by the sick quarters' kitchen They were made unfit for posting to other units for a week

Sigmoidoscopy was carried out in all but 4 cases There was one relapse in the sulphapyridine series while under outpatient observation. He was readmitted and rapidly cleared up in 2 days without further treatment Average total dosage of sulphapyridine was 34 g , the highest total amount to one patient was 43 g Average total of sulphaguanidine was 142 g , Nausea and vomiting were not serious, and affected patients on both drugs Two drug rashes were encountered, one a sulphaguanidine case, and the other a sulphapyridine They were morbilliform , one became confluent, but both cleared in 4 days

The main observations were , The more rapid reduction of stools, and disappearance of blood and mucus in the sulphapyridine cases than in those on sulphaguanidine , and the fact that cases on sulphapyridine became apyrexial within 24 hours, whereas cases on sulphaguanidine were often pyrexial for 4–5 days

DISCUSSION

In the first series of 73 mild and moderate cases, sulphapyridine used from the onset was not followed by a single failure, or by any case in which the clinical response was not immediate (i e , within 1–2 days) In no case on sulphapyridine in the first series was blood passed for more than 3 days On the other hand, of 52 cases receiving the present recognised dosage of sulphaguanidine, 5 cases failed to show satisfactory response

In the Shiga epidemic, the figures were even more conclusive , 5 out of 13 sulphaguanidine cases fared worse than any sulphapyridine case From published work and from observation of other cases treated in hospitals in the Middle East, it seems that though sulphaguanidine is often as effective as sulphapyridine, cases commonly occur in which it appears to be inferior This may be due to one or more of the following causes (1) Dosage of the drug may not be high enough (though the dosage commonly recommended has been shown to provide a bowel concentration of 150–200 mg %—the level advocated for this drug) (2) Sulphapyridine has a greater bacteriostatic action than sulphaguanidine in vivo (3) The attainment of a high bowel lumen concentration may, after all, not be as essential as the attainment of a high blood concentration in dysentery

Superficially, it looks as though there may be some truth in the last hypothesis For years the intestinal diseases have been attacked from the viewpoint of local action Intestinal disinfectants have been used and vaunted, but have failed to stand the test of time May it not be a preconceived and mistaken idea to aim at a high bowel concentration of sulphonamide ? True the sulphonamide compounds are effective as local agents, but though bacillary dysentery is pathologically a disease of the colonic mucous membrane, it is worth remembering that a tonsillitis or a pharyngitis is more effectually treated by a high blood concentration of sulphonamide than by painting the drug on those areas A severely infected wound would not be treated by local sulphonamide alone

In other conditions susceptible to sulphonamides the importance of catching the disease early in the acute stage has been emphasised, and presumably this is equally necessary in dysentery Where sulphaguanidine is scarce there seems to be a good case for using sulphapyridine, not only because the results in these two small series have been encouraging but because the drug is more plentiful, less is needed for each case, and it is cheaper On the other hand, there is more danger of agranulocytosis with sulphapyridine, which necessitates white counts if the drug is given for longer than 4–5 days, and it gives rise to more minor toxic phenomena In the first series reported here no patient required sulphapyridine for more than 4 days In the Shiga epidemic white counts were done in 11 cases, and there were a few examples of minor toxic phenomena among these cases, some patients vomiting on sulphaguanidine as well as some on sulphapyridine

Advantages of sulphonamides over other forms of treatment are the speed of recovery, and the facts that solid food can be taken early, that the patient does not need a long convalescence, and that discomfort is cut short If sulphonamides are used as a routine, however, there is always a danger that a dehydrated patient may get crystallisation in the renal tubules, with anuria In the Middle East, of course, supply and cost must also be considered

One severe case developed hæmaturia after 2½ days of sulphapyridine It was immediately discontinued, but his dysentery was cured Hæmaturia cleared in three days on fluids (forced) and massive alkali treatment by mouth He was a bad patient and would not take his fluids well in the first place It has been routine since this case to prescribe alkali—pot cit , gr 40 2-hourly—in the initial stages in all cases passing a large number of stools on admission It is understood from the Egyptian Faculty of Medicine that a urine pH of 11 is necessary before crystallisation can certainly be averted The importance of a daily urinary output of at least 1500 c cm has been stressed by Thompson, Herrell and Brown [5] of the Mayo Clinic as the surest means of preventing this complication

The disadvantages of supply and cost are outweighed, from the military as well as the civil aspect, by the remarkable saving on the period of non-effectiveness In this paper it is shown as 8 clear days per individual over the time with saline treatment

SUMMARY

Results in five comparable groups of cases of mild and moderate dysentery among Air Force personnel in the Middle East were compared Most were of the Flexner type

In 60 cases treated with salines, supplemented with sulphaguanidine later if necessary, the stay in hospital averaged 14 6 days (equivalent to 12 6 days in bed)

In 25 cases treated with sulphaguanidine the average period in bed was 5 36 days

In two groups of 43 and 30 cases treated with sulphapyridine the average periods in bed were 4 26 and 4 96 days

In 15 cases treated with kaolin (2 supplemented with sulphapyridine later) the average period in bed was 6 1 days

In an outbreak of severe Shiga dysentery the average periods in bed were 5 7 days in 15 cases treated with sulphapyridine and 8 01 days in 13 cases treated with sulphaguanidine

It is concluded that treatment with sulphonamides is superior to other methods tried, and that sulphapyridine has advantages over sulphaguanidine

Sulphonamide treatment should be begun early in the acute phase before the disease has spread or become chronic

Wing Commander J H L Newnham first suggested that strictly comparable series of dysentery cases should be treated by the various methods available I wish to thank Flight Lieutenant Craib for permission to record the results of his cases treated with sulphapyridine, and also Group Captain O'Malley, Wing Commander Lee Potter, and Major Dick for their help and criticism

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Status of the General Surgeon —The general surgeons on the staff of the Johannesburg General Hospital have issued a manifesto in which they deplore the prevalent impression that general surgery as a specialty is rapidly becoming defunct They argue that there is apt to be a confined outlook and lack of broad perspective in small specialties The one system concerned in any particular specialty is but a small part of the body, and its diseases are often considered without due regard to the whole organism The present-day tendency to embark on specialism soon after qualifying never permits such specialists to appreciate the immense importance of the condition of the rest of the body in relation to their own small sections of it In the teaching of students particularly, says the manifesto, the teacher must be able to consider the whole body in relation to disease and injury

ANTERIOR AND POSTERIOR FOSSA CEREBRAL TUMOURS

CLINICAL STUDY OF 122 CASES

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SINCE Hitzig and Fritsch discovered the motor area in 1870, certain physical signs and symptoms have come to be regarded as indicating lesions in various parts of the brain Clinicians, however, led by Hughlings Jackson (1871) have increasingly appreciated that the brain works as a whole, thus extensive lesions in one area may cause effects usually associated with lesions remote from it (Collier 1930) Hare (1931), Gordon (1934) and Jefferson (1939) have noted that anterior fossa tumours may mimic the symptomatology of tumours in the posterior fossa, and stressed the difficulty of deciding in which of these regions a cerebral tumour may lie Some tumours in the posterior fossa may also produce symptoms suggesting a lesion in the anterior fossa, though little attention has hitherto been paid to them in published work

Recently we have observed several cases which illustrated these two points, and led us to analyse the clinical symptoms of all cases of proven anterior and posterior fossa tumours in the National Hospital between January, 1938, and October, 1940 Only cases where the diagnosis was verified either at operation or autopsy were considered The 122 cases included 56 tumours of the anterior fossa and 66 of the posterior fossa The anterior fossa tumours were 40 frontal gliomata, 2 frontal cysts of undetermined nature, 11 meningiomata of the sphenoidal ridge, 2 meningiomata of the falx, 1 sarcoma arising from the falx The posterior fossa tumours were 12 cerebellar gliomata, 9 cerebellar cysts of undetermined nature, 7 medulloblastomata, 4 gliomata of the floor of the fourth ventricle, 2 ependymomata, 10 hæmangiomata, 17 neurofibromata, 3 meningiomata of the posterior fossa, 1 cholesteatoma, 1 vascular tumour of the lateral recess

The examination was confined to those signs and symptoms which, while generally useful in differentiating between tumours in these two situations, may cause confusion when they happen to be anomalous An analysis of such signs and symptoms is given in the table, they were mental changes, epileptiform convulsions, nystagmus, ataxia, the grasp reflex and an absence of all localising signs

INCIDENCE OF SIGNS AND SYMPTOMS IN 122 CONSECUTIVE TUMOURS IN THE ANTERIOR (56 CASES) AND POSTERIOR (66 CASES) CEREBRAL FOSSA

Symptom or sign	Total cases	In anterior cerebral fossa	In posterior cerebral fossa
Major fits	28	23	5
Loss of consciousness with—			
Minor motor disturbances	8	5	3
Fits and/or minor fits	36	28	8
Mental disturbance	58	42	16
Drowsiness	21	14	7
Nystagmus	49	7	42
Static tremor	9	8	1
Cerebellar ataxy	29	0	29
Slight irregularity of movement—			
Ataxy or tremor	15	2	13
Unsteadiness	55	13	42
Absence of all localising signs	20	13	7
Grasp reflex	5	5	

DISTRIBUTION OF SYMPTOMS

Mental changes were common in both types The most characteristic change was drowsiness and lethargy In 21 (16% of the whole series) this was so severe that the patient spent the greater part of his time asleep with occasional periods of misdirected voluntary motor activity, when roused however he would appear rational and cooperative Of these, 14 had anterior fossa and 7 had posterior fossa tumours Mental abnormality other than drowsiness was found in 58 cases (48%), these included affective disturbances, disorders of judgment and will, fixation of attention, alteration in basic mood, loss of inhibition and lack of spontaneity 16 (25%) patients exhibiting one or more of these changes had tumours in the posterior fossa and 42 (75%) in the anterior fossa Among the latter were the 12 cases showing the greatest degree of psychological abnormality in the series As a rule the mental changes were of recent origin in the posterior fossa group and may well have been due, as Stewart and Holmes (1904) suggest, to increased intracranial pressure There were 2 noticeable exceptions to this rule in one the mental change had been present for 25 years, and in the other for 15 years In these 2 cases the mental disorders may have been a coincidence Schuster (1902) found mental changes in 55% of 588 verified cerebral tumours, and in a discussion at the Royal Society of Medicine in 1931 Kinnier Wilson stated that the localising value of mental symptoms in cases of cerebral tumour was slight Most of those who took part in the discussion agreed

Epileptiform convulsions have long been known as a common feature of cases of cerebral tumour, but the work of Lennox and Cobb (1928)—who noted that cerebral tumours were found in only 3 5% of epileptics at autopsy—established that fits alone, in the absence of other symptoms and signs, are of little significance in the diagnosis of a cerebral tumour In our series, fits occurred in 28 cases, and a history of "fainting attacks" in a further 8 On careful investigation of the history it seemed that most of these fainting attacks were epileptiform in nature Fits occurred in 5 cases of posterior fossa tumours and loss of consciousness with minor motor disturbances in 3, giving an incidence of convulsive states in 12% of cases This is significantly greater than the figure of 0 6% for epilepsy in the adult male population of London (Galloway et al 1920), and must be due to an association between posterior fossa tumour and epilepsy Fits have been noted in cases of posterior fossa tumour by Collier (1904), 3 cases out of 26, MacRobert and Feinier (1931), 5 out of 45 cases, and Webster and Weinberger (1940), 34 out of 158 cases The association was denied by Parker (1930), who failed to find a single instance in 91 cases of posterior fossa tumour In the 1931 and the 1940 series, major epilepsy was relatively rare, while tonic and localised clonic attacks and syncope accounted for most of the cases.

In our series, 4 patients with posterior fossa growths (multiple neurofibromata, a cyst and a glioma of one lobe of the cerebellum, and a glioma of the floor of the fourth ventricle) all suffered from epileptiform fits One of these had, in addition, local clonic attacks which did not proceed to unconsciousness Another boy of 17 with a medulloblastoma had attacks of tonic bilateral adduction of the arms, followed by unconsciousness without any clonic movements Such further details as were available indicated that these attacks were similar to the classical cerebellar fits described by Hughlings Jackson in 1871 Of the 3 additional cases with loss of consciousness, one, a boy aged three years with a left cerebellar cyst, was reported to be stiff and unconscious with his legs extended during two at least of three so-called fainting attacks Thus it seems that a posterior fossa tumour predisposes to convulsions, occasionally these may be cerebellar fits, but more usually they are epileptiform in character

Epileptiform fits occurred in 23 cases of anterior fossa tumours 17 gliomata, 5 meningiomata and 1 sarcoma This gives an incidence of 41% in anterior fossa tumours Jefferson (1939) found convulsive attacks in 20% of 20 cases of frontal meningiomata and in 50% of 30 cases of gliomata of the same region Hyland and Botterell (1937) found it in 46% of 30 frontal gliomata An additional 5 cases in our series of anterior fossa tumour suffered from recurrent syncope

Nystagmus was regarded by Stewart and Holmes (1904) as one of the most valuable localising signs of cerebellar tumour They found it at one time or another in almost all their cases In our series, persistent nystagmus on lateral deviation was observed in 42 (64%) cases of posterior fossa tumour This does not include nystagmoid jerks observed at irregular intervals In addition, 7 (10%) cases of anterior fossa tumour also showed this sign Hare (1931) found that 19 of 50 unselected frontal tumours showed no evidence of incoordination or nystagmus, while another 5 of the same series simulated closely a lesion in the posterior fossa Comparable findings are recorded by Gordon (1934) and Jefferson (1939) In our series, nystagmus usually did not cause any great difficulty in diagnosis when present in anterior fossa cases, since most of these had other gross signs referable to a lesion in this region In 19 of our cases, nystagmus was an isolated localising sign, in 18 of these the tumour lay in the posterior fossa Stewart and Holmes (1904) described the typical nystagmus of cerebellar disease as " a deliberate jerking movement to the side of the lesion, when the eyes are deviated in that direction, with gradual recession to the middle plane, in conjugate deviation of the eyes to the opposite side the movements are of smaller range, but occur in more rapid succession " In our series nystagmus of this type occurred in 28 cases, 18 of which exactly corresponded with that description In 6, however, deviation of the eyes to the side of the lesion produced the finer and more rapid movements, and in 4 the tumour lay in the midline. Of the 28, 8 had unilateral intracerebellar lesions, in 7 of which the nystagmus conformed to the classical description

Ataxia —Irregularity of movement may be due to cerebellar ataxia or tremors In cases where the irregularity of movement is slight it may be difficult to differentiate between the two on this sign alone Such slight irregularities were found in 2 cases of tumour in the anterior and in 13 cases of tumour in the posterior fossa In most of these, however, other signs were present which pointed to the correct diagnosis Cerebellar ataxia was present in 29 cases, and all had posterior fossa tumours In addition, 3 anterior fossa tumours with hemiparesis had incoordination of movement in some respects resembling cerebellar ataxia on the hemiparetic side Static tremors similar to those described by Stewart (1906) were found in 10 cases, 9 of these had tumours in the anterior cranial fossa, and the 10th patient was found to have a cyst in the right lobe of the cerebellum This was an unusual case, since epilepsy had been present for twenty years In most of the 9 cases of frontal tumour with tremor this was greater on the side opposite to the lesion Another type of tremor, probably due to hypotonia (Holmes 1922), develops in many cases of cerebellar lesions on fatigue We have not found that this type of tremor causes much confusion, and since it is almost always associated with ataxia no special records were made

The *grasping, groping reflex* (Wilson and Walshe 1914) was observed in 5 cases of anterior fossa tumour Hyland and Botterell (1937) found this phenomenon in 1 out of 30 frontal gliomata, and Jefferson (1939) in 2 out of 50 frontal meningiomata and gliomata No such reflex was found in any case of posterior fossa tumour

Absence of localising signs —The absence of all localising signs in a patient otherwise known to have a cerebral tumour is regarded by many (Collier 1904, 1929) to be good evidence of a frontal or a right temporal location Such was found to be the case in 13 (23%) examples of anterior fossa tumour in our series We were impressed by the frequency with which drowsiness overshadowed the picture in posterior fossa tumours, so that either no signs relating to this region were obtained, or the signs consisted of one minor abnormality not constantly present In 3 cases at least, a left cerebellar hæmangioblastoma, neurofibromata of the 9th and 10th cranial nerves and a medulloblastoma of the roof of the fourth ventricle, diagnosis was only made after ventriculography In a further 4 cases, the physical signs on which the diagnosis was established were either likely to be missed by most observers or insufficient to warrant their being used as localising (10%) therefore of the posterior fossa gr ed by localising physical signs

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There seem to be inher
tion of growths in the an
fossa if too great

attacks, irregularity of movement, mental changes, nystagmus, or the absence of localising physical signs

In a consecutive series of 122 cases from the wards of the National Hospital, proven by autopsy or operation, 56 cerebral tumours were localised in the anterior and 66 in the posterior fossa

The grasp reflex in 9% of the anterior group, and cerebellar ataxia in 44% of the posterior group, were the only unequivocal signs

Nystagmus was seen in 10% and epileptiform fits in 41% of the anterior group, the incidence of similar findings in the posterior group was 64% and 8% Mental change was so common in both the anterior (75%) and the posterior groups (25%) that it should not be considered of value in localisation

All localising physical findings were absent in 23% of the anterior fossa group and in 10% of the posterior fossa group, this finding is unusual

We wish to thank the honorary staff of the National Hospital for permission to examine these cases, particularly Dr Gordon Holmes for his help and advice

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SCABIES AND INTELLIGENCE

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Hodgson (1941a and b) has shown that groups of patients suffering from different skin diseases may differ in their average intelligence In particular he found from a series of patients with skin diseases that those with parasitic infections, including scabies, contained the highest proportion of men of inferior intelligence In order to corroborate Hodgson's findings, and to see whether certain types of scabietic infection (for instance, with or without secondary infection) were correlated with different types of intelligence, several hundred patients were examined to assess their intelligence

The test used was the RECI Progressive Matrices (Penrose and Raven 1936, Raven 1939, 1942) Hodgson used sets A, B and C only, we used the whole five sets, A, B, C, D and E, in order that our figures could be compared with the " norms " which have been obtained by examining very large numbers of men on their entry into the Forces The men were allowed 20 minutes in which to attempt the test The highest mark obtainable is 60, and with this limited time test several hundred thousand army recruits gave scores which may be divided into grades as shown in the table, these results may be considered as norms

In every group of men examined some give scores which should be placed in another grade as " unreliable " These unreliable scores are distinguished by being significantly different from the average results in their " break up " of the answers for the different sets of questions The exact nature of a so-called unreliable score is best explained by means of an example The five sets, each of twelve questions, are of increasing difficulty and the average marks (for correctly answered questions) for men whose total was 22 were 10, 7, 3, 2, and 0 for sets A, B, C, D and E respectively If a total of 22 is scored, and if for any two sets the result is more than 2 marks different from the average, the result is u

Thus, a score of 22 made up as 7, 10, 3, 2 and 0 would be considered unreliable In analysing our figures we have treated separately 38 results which appear to be unreliable. Incidentally, whether or not the unreliable scores are included in the calculations given below, little difference is made to the final results

RESULTS

A series of 316 men were subjected to the test , 25 of these who were tested before their skins had been examined, were found not to be suffering from scabies and their results have been ignored , causes outside our control interrupted 3 of the tests and these too have been neglected , the 38 unreliable scores were treated separately In the table the results in the remaining 250 reliable scores are compared with the normal distribution and it will be seen that there is no significant difference at the lower end of the table, although our patients appear to include a rather low proportion of men of superior intelligence This result is not in agreement with Hodgson's conclusion that a high proportion of scabies patients are of lower than normal intelligence

TEST SCORES IN NORMAL RECRUITS AND IN PATIENTS WITH SCABIES

Intelligence grade	Marks	Per cent of	
		Norms	Scabies
1	45 or over	15 8	10 5
2	39–44	25 7	22 5
3	33–38	23 9	26 5
3	27–32	16 1	21 0
4	18–26	13 5	13 5
5	17 or less	5 0	5 5
Unreliable		5 0	13 2

The main criticism of Hodgson's results is that his norms are too high With a total possible score of 36 only 5% of his control group scored 19 marks or under In the norms used here—obtained from much larger numbers of subjects—out of a possible total of 60 marks 5% of the men scored less than 17 We believe that if Hodgson had used norms obtained from a larger group of subjects and not from a selected population like an RAMC intake his results obtained from scabies patients would not have been very different from ours

In the Army at present there is a good deal of propaganda about conditions such as scabies, and the men are urged to report sick as early as possible if they detect any such complaint One might expect therefore that the more intelligent man would report himself sick and the dullard would find little cause for complaint and only be detected at a routine inspection In all, 176 men reported themselves sick and 72 were detected at routine inspections (no data were kept in the other 2 cases) There appears to be no difference in the average intelligence of these two groups, the average score for the self-reporting cases being 33 9 marks whereas that for the men detected at routine inspections was 34 2

Scabies is usually detected because a patient itches and complains of this symptom or because he relieves his itching by scratching, and the scratch marks are themselves observed It was thought possible that less intelligent individuals might support larger parasite populations before sufficient itching was noticed and scratching provoked to lead to the detection of the complaint Actually this does not appear to be the case We have developed a technique for estimating the intensity of the parasitic infection accurately, and, when we divided the men into two approximately equal groups, those with a lower number of parasites (126 men) obtained on the average 33 0 marks and those (124 men) with a higher number scored 34 9 The phenomenon of itching is a complex one and it is perhaps not surprising to find it bearing no direct relation either to intelligence or parasite population

In most *cases neglected* scabies is complicated by secondary infection which is as a rule more serious in its consequences than the primary sarcoptic attack One might expect the intelligent man to be concerned about the onset of secondary infection, whereas the dullard would have nothing done about it In this investigation 168 cases showed no secondary infection and 82 some degree of it The average score for two groups was 33 5 and 34 9 respectively

Among the 13% (38 cases) of scabietic individuals who gave scores which had to be considered unreliable our figures were 5% higher than the norms ; this may be because many patients with scabies are suffering from anxiety, perhaps because many of them believe they have contracted a venereal disease

SUMMARY

Men suffering from scabies had their intelligence tested by the RECI progressive matrices test The results indicated that they were mentally an approximately normal sample from the Army There was nothing to suggest that this group contained an abnormally high proportion of men of low-grade intelligence

No significant difference in intelligence was discovered between men who reported themselves sick and those who were detected at routine inspections , those with few and those with many parasites , or those with or without secondary infection

We wish to thank Dr. F J Esher for his advice and Major J D W Pearce and Major G A Hodgson for reading and commenting on the manuscript

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DIAGNOSIS AND TREATMENT OF SCIATIC PAIN

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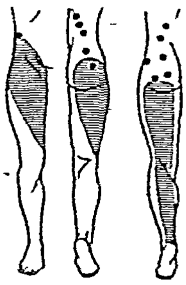
(From a military hospital)

IN the Army I have met with a large number of men complaining of a dull ache sometimes extremely severe, down the back of the thigh, sometimes extending as far as the heel and sometimes stopping at the popliteal space The pain may be referred to the outer aspect or front of the leg ; it is increased on standing and often worse at night In my view the origin of this pain is almost always muscular Well-defined myalgic spots harder than the surrounding muscle, can be found in the quadratus lumborum, glutei or tensor fasciæ latæ muscles Pressure on these produces agonising pain, sometimes similar in character and distribution to that complained of, and persisting for some minutes The distribution of the spots does not correspond with that of the pain complained of, which is a referred one Injection of procaine into these spots removes both the local tenderness and the referred pain

EXAMINATION AND TREATMENT

Hard pressure is made with the right thumb, or with the index or third finger on the origin, *insertion* and along the border and course of the muscles to be examined Wherever possible the muscle or tendon should be pressed against a bone The pressure has to be made so as to cause only moderate discomfort or slight pain when applied to a normal muscle, and patients easily distinguish the difference between such a pressure on a normal muscle and on a myalgic spot Pressure on a myalgic area elicits so agonising a pain that the patient winces and sometimes says spontaneously "You have got it sir" In muscular sciatica the myalgic areas are, as a rule, to be found in the edge of quadratus lumborum, the origin and border of upper (muscular) part of tensor fasciæ latæ, in the gluteus medius about ¾ in. below the iliac crest and in the course or rarely the origin of gluteus maximus The figure shows characteristic examples of pain distribution and myalgic spots



Areas of pain (shaded) and myalgic spots in two cases.

Rapid, effective and permanent relief can be obtained by injection of procaine into each myalgic spot, care being taken to infiltrate the whole muscular area I use procaine hydrochloride, 1 g, with phenol, 0 5 g, made up with saline to 100 c cm in sterile rubber capped bottles The myalgic spots are mapped out very carefully on the skin with a blue dermatograph, the pencil marks are painted over with iodine and 1–2 c cm of the procaine solution is injected intramuscularly into each myalgic spot The results of a thorough and accurate injection are almost instantaneous relief of pain, relaxation of the contracted muscle as evidenced by palpation, and disappearance of local and referred pain and the wincing when the myalgic spot is pressed

RESULTS

In the Army I have seen, among 700 cases of myalgia, 65 officers and other ranks who suffered from the syndrome of "sciatica" In all the cases the myalgic spots described could be located in the hip muscles by objective criteria All but one case were fully relieved and returned to duty in a relatively short time The one case not cured turned out on psychiatric investigation to be due to simulated pain I am confident that these favourable results can be obtained by every physician who takes the trouble to locate myalgic spots and apply the appropriate treatment I treated the 65 cases in medical inspection rooms and at two military hospitals, and was therefore not able to follow them all up, in several patients seen up to 10 months after the last treatment the permanent results were good

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Reviews of Books

Disorders of the Blood

(4th ed) L E H Whitby, MD Camb, FRCP, C J C Britton, MD NZ, DPH London J and A Churchill Pp 595 28s

In producing a new edition of this well-established book the authors, by including a good deal of new material, have sought to bring it properly up to date Unfortunately the additions have not always been wholly assimilated, nor the contradictory older sections thoroughly pruned, this is especially true of the first two chapters A new plate (plate III) sets out very well the classification and development of the erythroblasts according to present-day ideas, the scheme of Israels having been selected as representative, and plate IV also shows good reproductions of hæmoglobinated megaloblasts, and normoblasts, using these names in the same way, but plate II and tables II and IX are still retained, and these show a quite different kind of megaloblast—that of the schemes popularised by Doan and his followers some years ago This confusion is found throughout the text wherever erythropoiesis is mentioned, either normal or pathological, so far as we can see "megaloblast" between inverted commas indicates the cells illustrated in plates III and IV, megaloblast without inverted commas indicates the plate II cell There must be few hæmatologists nowadays who do not agree that megaloblastic changes in the marrow are limited to pernicious anæmia and allied conditions, and this is properly illustrated in plate III, but in the text megaloblasts are described as being present in the marrow of "simple anæmia," and the table of normal marrow cells (p 561) shows megaloblasts present up to 4% The scheme used in plates III and IV is now sufficiently accepted to allow the presentation of a much more uniform account of erythropoiesis than the authors give here The rest of the book maintains previous high standards It is interesting to see that Wintrobe's "morphological" classification of anæmias is used and is fully set out in table VII, this table will be puzzling to those brought up on "colour index" classifications, since the term "hyperchromic" doesn't appear at all, but it is a step in the right direction Full descriptions are given of recent work on methæmalbumin, the rôle of the porphyrins, the importance of vitamin K and glandular fever The section on blood groups is unusually complete and tackles the subdivisions of group A and the recently described "Rhesus factor" As might be expected, the section on blood transfusion and blood substitutes is thoroughly practical The discussion of the differential diagnosis of pernicious anæmia is very complete, and a useful table is given on p 200 of the various liver and stomach preparations available in this country for its treatment The increased iron requirements in adolescence are emphasised, and the theory that copper is necessary for erythropoiesis is supported The section on technique is practical, but to give 7½ pages to descriptions of how to determine red blood-cell diameters and only 2 pages to bone-marrow biopsy seems to be the wrong way round in view of the relative importance of these two investigations in differential diagnosis, the work of Jeanneret on the difficulties of obtaining reliable post-mortem marrow specimens is fully noticed The make-up of this book is familiar, and the publishers have again shown that it is possible to produce a book of nearly 600 pages with 8 excellent colour plates at a reasonable price

Society and Medical Progress

Bernhard J Stern, PhD, lecturer in sociology, Columbia University Princeton University Press, London Humphrey Milford, Oxford University Press Pp 264 18s 6d

Dr Stern cuts across the arbitrary barriers that have taken medicine out of the context of other sciences and social institutions, and shows that it cannot develop and never has developed in isolation—that its rôle and achievements are conditioned by the soil in which it is rooted His dynamic interpretation of medical history is at once stimulating and revealing The impact of social needs on medicine has been brought into relief, in England and America, by the problem of providing adequate medical care for those with low incomes Medicine, by reducing mortality and lengthening the life span has had repercussions on social life, chronic and degenerative diseases have become prominent, and this has affected public policy in the care of the aged Medicine has encountered opposition in its progress—from within the profession, from workers in other branches of science, and from non-scientific circles In each case, as Dr Stern shows, resistance to change has depended on social and economic factors

A Pocket Medicine

G E Beaumont, DM Oxfd, FRCP, physician to the Middlesex Hospital London J and A Churchill. Pp 202 10s 6d

The essentials of a bigger text-book are here condensed into 200 pages, and perhaps in war-time a reliable pocket medicine has its special place (besides the pocket) It is one of the minor horrors of war that it also has its special price Those who know Beaumont's fuller text-book will recognise this volume as an expertly abbreviated edition, it contains an astonishing amount of information and surprisingly few omissions The paper and printing are first-rate, a noteworthy advantage if it is to be read in war-time trains with war-time crowding and lighting The 15 chapters are arranged mainly according to bodily systems, but with special sections on tropical diseases, infectious diseases, parasitic worms, poisons, the ductless glands and metabolic diseases Some lack of balance is inevitable thus peripheral neuritis receives as many lines as ochronosis But for revision, provided he has founded his clinical learning on a rock, many a student will be glad to slip this book into his pocket

Illustrations of Regional Anatomy

4th ed, sections I–V, 3rd ed, sections VI and VII E B Jamieson, MD Edinburgh E and S Livingstone Plates 318 60s

The third edition of sections I–V of these well-known books was unfortunately lost by fire, so Dr Jamieson has quickly produced the fourth edition of these sections together with the third edition of sections VI and VII The coloured plates represent dissections of the regions concerned The fourth edition of sections I to V show, in general, that accuracy to be expected from the author In the interests of the learner, it is perhaps worth noting that the relation between the radial artery and the muscular part of the long flexor of the thumb might be misunderstood from plates 27 and 28 of section VI, showing the deep front of the forearm, this is only a detail, but regional anatomy is composed of such details, and if one of them is wrongly conceived, the whole picture must suffer Section VII deals with the lower limb fully and successfully The whole production reflects credit on the author, publishers and printers who faced and made good the damage

Supplement to THE LANCET, Nov 21, 1942

MEDICAL PLANNING RESEARCH

INTERIM GENERAL REPORT

I Introduction

1 MEDICAL PLANNING RESEARCH has set out to present a plan for the future of medicine in Britain. Through the medical press, it has invited membership from those who are prepared to play an active part in its work. Members who have prepared drafts for this interim report have been, for the most part, doctors qualified less than 21 years, or others connected with the health services who are not over 45. Members who wish to act as critics of the report are of all ages. Drafts have been received from over 200 members, and have been edited by a small editorial group. Since the report is intended as a basis for discussion, there has been no attempt at making the editorial group representative. The report is now presented for examination and detailed criticism by the members of MEDICAL PLANNING RESEARCH, and anyone else who may wish to do so. For their convenience, paragraphs are numbered consecutively throughout. Criticisms should be sent to MEDICAL PLANNING RESEARCH, c/o The Connaught Hospital Walthamstow, London, E 17. So as to give members serving in Middle East and other distant parts full opportunities for criticism, it is not proposed to prepare the final report until at least 6 months after this interim report has been circulated.

2 Members of MEDICAL PLANNING RESEARCH are pledged to two guiding principles. First, they agree to proceed by scientific methods. This involves the collection of all available evidence, belief according to the evidence, and readiness to admit error whenever shown by the evidence. It involves also an attitude of impartiality in dealing with matters whether of unusual novelty or sanctioned by time-honoured tradition. Secondly members agree to place first in their planning proposals the maximum benefit of the maximum number of patients. If this aim is to be achieved, it is only one degree less important to have optimum conditions for those who serve the patients. But if these two conflict, the patients must always have precedence. The word "patient" is defined as any person receiving, or needing to receive, the help of medicine in its broadest sense—that is, the prevention and treatment of physical and mental illness, and the production of positive health, physical and mental. In computing the maximum number of patients, the only practical method is to count each individual as one. Attempts to place different social values for health purposes on the labourer and the lawyer, the director and the dustman are not only impossible, they are foreign to the whole spirit of medicine.

3 This interim report has two parts. The first is a broad general outline of our proposals for the future of medicine. The second will deal with the numerous detailed problems which must be fitted into the broad picture. Ultimately it is intended to publish the final revised versions of both parts as a book.

4 At the start of our task, we have to recognise two groups of problems connected with, but not strictly a part of, medical planning. First, medical organisation is very largely determined by the social pattern of the society in which it exists. The nature of this pattern imposes certain limits on our efforts. Thus, for example, a small island community of a few thousand people could not maintain a teaching hospital. If it had to train its own doctors, it would have to revive the apprenticeship system. Our present medical system has grown up in a strongly individualistic society, with many special virtues and special faults, in consequence. We shall examine the probable social pattern of postwar society, so as to see the framework inside which the new medical services will have to be built. We shall have comments to make on this framework from our special medical point of view.

5 The second group of problems connected with, but not strictly a part of, medical planning are those of environmental planning for health and happiness. Whereas in the first group, we are concerned with the changes that are likely to occur, and their effect on medicine, in the second we are concerned with those which ought to occur if maximum health of mind and body is to be obtained. The first is, as it were, our minimum, the second is our optimum. We shall have, then, to add to our study of the pattern of postwar society, a study of the special measures which should be taken, inside these limits, to achieve the highest measure of positive mental and physical health. We shall study these two sets of problems concurrently from five different aspects: population, productive capacity, poverty, purchasing power, physical planning of town and country.

PART I

Minimum and Optimum

II Population

6 Among demographers (scientific students of population) there is substantial agreement on the following points:—

(i) If the population trends which existed in Britain before the war continue indefinitely, the rate of increase will get steadily less. In due course the population will become stationary at a maximum about 2 million more than the present figure of 46 million. This will be between 1951 and 1961. Thereafter it will steadily decline. Estimates for the population of England and Wales (now about 40 million) in 100 years' time range from 20 million to 4 million. These estimates depend on one assumption—that the prewar trends continue unaltered. But the upper limit of the birth-rate for the next 20 years is already determined by the number of girl children born in the past 25 years. In demography one has to look ahead a long way if one is to take check of a declining population.[1]

(ii) Concurrently with the slowing of the growth of the population, there will be a shifting of the age-grouping, from the younger to the older. The Registrar-General has forecast that in 1971, when the population has dropped to the 1937 level, the number of children under 15 will have fallen by 2½ million, and the number of persons between 15 and 65 by 1½, while the number of old people over 65 will have risen by 4 million. These figures strongly emphasise the danger of declining population which lies ahead. For this ever diminishing band of children represent the parents of the succeeding generations.[2]

(iii) It is both possible and practical to plan and control the population within certain limits, provided the population concerned agrees to do this and cooperates. The limits are, on the one hand, the potential fertility of the female population, and on the other the amount of skill necessary to use the simplest birth-control device. Even this lower limit can be still further reduced by compulsory or voluntary sterilisation.

(iv) In most people, emotional factors encourage the production and rearing of children, while economic factors discourage it. Having children in Britain is a pleasure, but for all but agricultural labourers a bad cash investment. Probably the most important factor in reducing fertility in the middle of the last century was the stoppage of child labour, which turned a large family from an economic advantage into a disadvantage.[3]

An interesting rider on this is provided by a survey undertaken in April, 1942, by the British Institute of Public Opinion. A representative cross-section of the adult population of Britain was asked "What do you think is the main reason why parents nowadays are not anxious to have larger families?"

The results were as follows:—

	%
Economic reasons (46%)	
Incomes too small for large families	26
Can educate small family better	14
Insecurity of all kinds	6
Political reasons (19%)	
War, why bring up cannon fodder?	13
Lack of faith in the future	6
Personal reasons (19%)	
Young people want freedom	12
Too much responsibility and bother	6
People have too much sense	1
Miscellaneous (9%) (including birth control, lack of state assistance, taxation)	
No comment (7%) (including those saying they do want large families)	

(v) Attempts to make children less of an economic disadvantage—but still a disadvantage—and thus to stimulate reproduction, have failed. In past times and even at present in the lower social groups, whenever children have been an economic advantage, reproduction has increased. This is, however, probably not the only factor; the lower social groups are almost certainly more careless over birth-control technique than the upper groups.

(vi) A falling population has sometimes been regarded as a good thing, because it would cure unemployment. This view is based on a fallacy. The amount of available goods and services for everybody in any community depends on the amount of work which all members of the community do. The larger the community, the more specialisation is possible, and the more there is available for all. The ultimate limiting factor is raw material, and as yet there are no signs of shortage of raw material in the world as a whole. If the size of any community decreases (other than by emigration, which is a spreading of the community rather than a reduction in its size), the amount of goods and services available decreases, and the real standard of living falls. Assuming that the organisation of the community is not changed, unemployment will in fact increase relative to the whole population. A falling population in itself will produce rather than cure unemployment. Unemployment is a sign of bad organisation rather than overpopulation.

(vii) Most reasonable people in Britain, who have thought seriously about the problem, want to see the British race (used in the loose sense to mean those who live in Britain) continue to exist at a population level which does not overcrowd these islands. What constitutes overcrowding is a debatable point. But even those who consider the present population too great agree that there is still much space in the world where people of British stock could live with pleasure and profit to themselves and their neighbours.

7. The following proposals follow inevitably from these agreed facts:

(i) After the war a long-term planned population policy is needed. It is difficult to start such a policy in war-time because the immediate need is for a large body of female labour not incapacitated by pregnancy. But from the point of view of population planning, certain war-time measures should be continued into the peace until they are replaced by something better. These are war-time nursery schools, cheap and free milk and vitamins, and school meals.

(ii) The main point of such a policy must be to make children an economic asset rather than a liability to all social classes of the population. It will be useless merely to make them *less* of a liability (e.g., by increasing income-tax children's allowances which meet *part* of the cost of children). The best ways of carrying this out appear to be:—

(a) A universal system of adequate family allowances for all non-wage earning children. The cost per year of an allowance of 10s. per child per week would be:—

For all children up to 18 years	£300,000,000
For 10% of young people aged 18–21	5,000,000
For 5% of young people aged 21–25	3,500,000
	£308,500,000

The figures given for the upper age-groups assume that 10% and 5% of the population are receiving post-secondary education—possibly an overestimate. The national income in 1941[4] was £6,338,000,000. The cost therefore of this proposal is under 1/20 of the national income. If we decide that to spend or rather redistribute 1/20 of the national income in this way is essential, the question of how the money is raised is of secondary importance. This will be discussed later, as also will the many other advantages which follow from family allowances, apart from their effect on the future of the population (¶ 17–20).

(b) *A universal system of free education, with equal opportunities for all children, and planned vocational training.*

(iii) It is only slightly less important to make children a social asset to all classes of the population. This calls for:—

(a) A planned housing policy, so that homes and their surroundings may be suitable for the happy and healthy growth of families of 3 or more children.

(b) The provision of nursery schools so that mothers who wish to carry on premarital occupations may do so.

(c) An educational campaign throughout the country to popularise families of 3 or more children. It is useless to carry out such a campaign, however, unless all the material factors working against large families have first been dealt with. It is important that commercial interests which may compete against large families should be carefully watched, and if necessary controlled. A "baby car" is an asset for the unmarried or the sterile, but if it is allowed to compete with children, it becomes a danger to a planned population policy.

(iv) Having taken steps to encourage fertility it is essential to study the results. To undertake such studies, it is suggested that a Demographic Research Department should be set up as a part of a national Social Research Council, analogous to the Medical Research Council. The results of such studies should be published.

(v) While every economic and social encouragement should be given to those who want children, the means of avoiding children should also be available to all. It is suggested that if children are a sound economic and social investment, the only people who will not wish to have them will be the feckless, the selfish, the lazy, the psychopathic—in fact precisely the group whom the eugenist would wish to see breeding least. Particularly among working-class men, the use of contraceptives is looked upon with disfavour; it is even thought to cause impotence. Education for the "3-and over" family may therefore be coupled with education in contraception. In particular, the efficacy and simplicity of modern chemical contraceptive technique needs making known to the public generally.

(vi) On the subject of compulsory sterilisation either of mentally defective adolescents on discharge from institutions for children, or of recovered psychotics on discharge from mental hospitals, we express no final opinion. Until more is known of the carriage of defective genes by normal people, and of talent-conveying genes by abnormal people, we consider that it is wiser not to rush in where experts fear to tread.

III Productive Capacity

8. It is now known that the wealth of a country is not measured by the amount of money, or even gold, that it possesses, but by the amount of goods produced and services performed by its citizens. Even imported goods are ultimately paid for by current exports, by services in the form of marine transport, or by past exports not paid for at the time by the recipients (capital investments abroad) Our national wealth, then, depends entirely upon how intelligently and how hard we work

9 In war-time, we divert a great part of our national energy and intelligence to the task of waging and winning the war We reduce our personal wealth (in the form of the goods and services we each receive) to the lowest level compatible with the efficient waging of war, and devote the surplus to the fighting services and the manufacture of munitions The limits of our war effort, as this is called, are not financial but physical We must keep our citizens physically fit for their war work, and mentally content to go on doing it Every scrap of energy and intelligence beyond that can be, and very largely is, devoted to the war effort This is brought about by a series of industrial, social, and financial manipulations —

(i) *Control of industry* —New war industries are built, and the unemployed population is given work The output of peace-time industries is fixed, so as to supply the minimal needs of the population, and no more This is done by controlling the allocation of raw material, and fixing the amount of manufactured goods produced The excess prewar productive capacity is turned over to the war effort The creation of new non-war industries is forbidden

(ii) *Rationing and price-fixing* —If no steps were taken, the greatly reduced amount of goods available for home consumption would all be bought up by the people with most money Prices would rise rapidly and shortages would be severe So the maximum amount of the essential goods each person may buy is fixed (rationing), and the prices of these and also semi-essential goods, as well as rents, are pegged at definite maxima, at the same time, subsidies may be paid to the essential restricted industries to enable them to carry on producing at the fixed prices As a result nobody can have more than his fair share or spend more than a certain amount. The surplus money in everybody's pockets is removed either forcibly (by taxation) or voluntarily (as national saving) Thus, even if one does not buy war savings but leaves one's surplus cash in the bank, the bank in fact lends it to the Government - Some people may hoard money at home This does not matter in the least, as it is not diverting energy from the war effort If, however, after the war we reverted to a free economic system, the sudden spending of this hoarded money might produce disastrous results

10. The war has taught us that finance is not a limiting factor to our efforts in any direction The limiting factors are the amounts of raw material, machinery, and labour we possess, and our power to coöperate in their use

11 At the end of the war, we may have to keep, say, half our war industries going and half our armed services in existence to act as an international police force We shall be nationally *richer* by the freed machinery and freed man power than during war-time But that wealth will be a potentiality only, unless we decide to use it If we allow our munition workers and service men to be unemployed, we shall be actually poorer. We have overcome unemployment by an enormous armament programme, analogous in some ways to a public works programme, combined with systems of control, rationing, and price-fixing. As a result, some groups of people, in particular those living on fixed incomes, are considerably worse off than they were in peace-time They will want to revert to a free economy If we allow them to have their way, we shall repeat the story of 1918 to 1939

12 More and more people (including members of the Government) consider that controls have come to stay. Our postwar industrial production will have to be planned nationally, to meet first of all the needs of the people and only then the luxuries Maximum prices will have to be fixed, and subsidies paid if necessary in essential industries Rationing of goods of which nobody buys more than they need (perishable foods, fuel, &c) can be dropped as soon as supplies are adequate to meet needs, though, in view of the needs of the occupied territories this may be some time But some form of composite rationing for clothes, hardware, furniture, and non-perishables will have to go on for a long time Unless this is done, an orgy of buying will lead first to severe shortages, and then to an orgy of production, followed by a fall of prices and a slump—with a recurrence of unemployment

13 How are needs to be determined ? How are we to decide what to produce ? First must come physical necessities —

(i) Nutritious food Science can be as dictatorial about nutritional minima in peace-time as it has been in war-time, and adequate food-supply should be an A1 priority

(ii) Adequate supplies of heat, light, potable water, sewage disposal arrangements, and fresh air These also are A1 priorities for everybody, but where alternatives are possible, public preferences must be weighed This itself is a scientific job, and the Government already has machinery for carrying out preference tests—the Wartime Social Survey of the Ministry of Information [5]

(iii) Preventive and restorative health services These again are A1 priorities With them the rest of this report is concerned While there is much discussion about how these services should be organised, there is less room for discussion in considering what the people need It must be continually remembered that finance should no longer be regarded as a limiting factor If the physical means to supply these services are available, cost is no longer an excuse for delay

(iv) Clothing necessities The war is teaching us how to distribute the minimal clothing needs fairly It is also showing how wide a variety is possible inside these minima Until all basic needs have been met, energy must not be diverted to producing variety only for variety's and profit's sake Preferences within the minimal need figures can be determined by social survey (see ii above)

(v) Housing, furniture and hardware In no field is speculative finance more disastrous than in housing To sell a bad house is to take the edge off the happiness of its successive inhabitants as long as it is inhabited Men spend long terms in prison for crimes causing far less upset to society Further, a house always has to be thought of in relation to its environment—its distance from the places of work, education, and amusement of its inhabitants, its distance from shops, its relationship to its neighbour houses The task of replanning and reconstructing the results of a century of bad building and a few years of bombing is certainly one which could occupy all surplus unemployed for many years to come But it can only be carried out if private interests are firmly dealt with, wherever they conflict with public interests The sale of shoddy furniture and hardware is hardly less of a social crime than the sale of shoddy houses As with clothing, the manufacture of excessive varieties must be prohibited until the basic needs have been met with a limited utility range

14. Mental necessities are no less important than physical necessities

(i) Adequate education This is no place to set out a plan for education If, however, one remembers that finance is no limitation, the modest proposals of educational reformers during the past 20 years should be regarded as a minimum Free education for all till 18, with the last 4 years increasingly vocational, should be combined with free university or technical training for those who can profit most from it The size of the quota entering each faculty must be determined by the national need It is equally important that the salaries of school and university teachers should be raised to a level nearer to the most lucrative profession—medicine The care of the child's mind is, one would suggest, even more important than the care of the adult's body One last word adult education is only a little less important than child education Neither need be dull—in fact, if they are dull, they are failing To everyone, throughout his or her life, food for the mind must be freely available, and nicely graded according to individual capacity.

(ii) Adequate occupation The deterioration which follows lack of occupation has been adequately enough shown in the past 20 years for even the most critical scientific observer. Optimal maximum working hours, from the point of view of efficiency and production, have been determined. We go beyond these at our peril. Equally, in the other direction, there is a minimum below which one starts to get “the cameleous hump.” The need for adequate occupation for all is merely the other side of the production story. While the essential (and even semi-essential) needs of anyone are unsatisfied, there is no excuse for a system which allows anyone to be unable to find work. We may, if we are sensible, regard refusal to work as a crime against society which deprives the refuser of the rights of the citizen. As for the person whose actions create unemployment, he must receive a little elementary education in economics and civics.

(iii) Adequate recreation. The production of recreative facilities involves the planning of parks and playing-fields, countryside and coastline, theatres and cinemas, clubs and societies, hotels and hostels, transport and communications. For everyone, the minimum must be the easy facility to enjoy all we have to enjoy in Britain—in our countryside, literature, drama, art, music, architecture, sport. Nor must we be rigidly national either in taking or giving these pleasures which life has to offer.

15. *From our consideration of the productive capacity* of the country, and in particular from the lessons we have learnt during war, the following conclusions may be drawn:—

(i) Since it has been discovered that finance, as such, is no longer a limiting factor in national endeavour, it will only be offered as an excuse for not taking action by the ignorant, the prejudiced, or the wicked. Action must be based on available real resources and priority of needs.

(ii) Available real resources will be greater after the war than during it. There is no need for a return to pre-war poverty, slumps, or unemployment, if we are prepared to impose certain disciplines on ourselves. By continuing to sacrifice some freedoms, which we have willingly sacrificed in war, we can gain greater freedoms than we possessed before.

(iii) As these facts are rapidly becoming common knowledge, it is likely that the public will choose to have a planned and controlled economy, with its corresponding social benefits.

(iv) A planned health service is an A1 priority. The best that the medical and allied professions can provide must be available for everybody. Provided this does not encroach on other A1 priorities we need not count the cost. Since the productive wealth of Britain has never been greater, we can plan if not prodigally at least boldly.

IV. Poverty

16. It is generally agreed that poverty, by which is meant lack of enough money to purchase the necessities of life, is a major cause of ill health and unhappiness. The average height and weight of the poor is considerably below that of the upper and middle classes. The infant-mortality rate and the incidence and death-rates of pulmonary tuberculosis tell the same story. The mental misery caused by poverty—and the fear of poverty—cannot be expressed statistically. The anxiety of the worker for whom unemployment or sickness means lack of food for his wife and children, the anxiety of the mother who cannot buy what she knows her children need, the anxiety of the old person who cannot exist without contributions from his or her children which are themselves producing poverty in the contributors, make up something of the mental results of poverty.

17. The immediate causes of poverty in twentieth century Britain are equally well known. They are:

(i) Unemployment of the chief wage-earner (32%).

(ii) Sickness of the chief wage-earner (9%).

(iii) Insufficient wages to meet family expenses. These expenses depend more than anything else on the number of children in the family (21%).

(iv) Old age (22%).

(v) Widowhood or unmarried motherhood, if associated with inability to work because of children (6½%).

The figures in parentheses are those of Tout,[6] based on a sample of 480 of the 11,000 Bristol families suffering from poverty in 1937. (A miscellaneous group of about 10% completes Tout's analysis.) The distribution of causes will vary to some extent from area to area.

18. *It follows that the complementary causes of poverty are*:—

(i) Inadequate unemployment insurance and assistance.

(ii) Inadequate sickness benefit.

(iii) The failure of wages to allow for the size of the family.

(iv) Inadequate old age-pensions.

(v) Inadequate widows' pensions and allowances for their children.

19. Absolute poverty causes physical ill health. *Relative poverty causes much unhappiness in the income groups outside the absolute poverty classes.* Relative poverty may afflict the family of a wage earner whose income is £1000 a year or more. He may consider it his duty to his children to send them to public schools and universities. If he has 3 sons, they may cost him, for 7–10 years, more than £600 a year. If he, or his wife, have old or sick dependent relatives, he may have to pay another £100 a year. A severe illness in the family with an operation will reduce his income by another £100. As a rule the result will be disposal of savings or debt. It follows that measures aimed at curing the ill health or unhappiness produced by poverty must be applicable to all classes if they are to be effective. Measures which exclude the upper and middle classes provide a high road *to fascism.*

20. The cure of poverty follows automatically from a study of its causes:—

(i) *There must be a national minimum wage* for both sexes which will enable its recipients to purchase all the basic needs for physical health. This, and all subsequent figures, must be initially determined and redetermined at regular intervals by the method of social survey. As immediate postwar national minimum wages, we suggest 20s. a week for children under 18, 30s. for young people between 18 and 21, and 40s. for people over 21.

(ii) To this must be added a wife's allowance where the wife is working domestically. It is illogical that the wage packet of the married and unmarried man should be the same. Equal pay for equal work is a principle deeply ingrained in the British industrial system, yet it is a principle which is seldom extended to women. In our view, equal *basic* pay for equal work, regardless of sex, should be a universal principle. But the married man with his wife employed domestically should have his pay supplemented by a *marriage allowance of, say,* 20s. per week. It would be unfair that employers should be penalised because they employ a large number of married men, or assisted because they employ a large number of single one. We therefore propose either an employers' marriage allowance fund, into which all employers pay a fixed sum for every person employed and from which they receive the money necessary to pay marriage allowances, or an extension of the state social insurance scheme hereafter described. Of these two possibilities we favour the latter, since the former might encourage employers to reduce both staff and productivity. Since, however, we consider that family allowances, adequate unemployment and sickness pay, and old age and other pensions are a much more urgent problem (indeed, marriage in the absence of children does not figure as a major cause of poverty), we shall omit any detailed consideration of marriage allowances from our social security proposals.

(iii) Family allowances for children must be introduced. These have already been briefly discussed in connexion with a population policy. Again, they must not fall as a direct burden on the employer, and a combination of social insurance and Government subsidy should operate.

(iv) Unemployment benefit, sickness benefit, and widows' pensions must be raised to the national minimum wage level. Wife's allowances, in the case of men who are out of work or sick, should continue, as also must family allowances for children in all three cases. Sickness benefit should cover injury or permanent disability, whether sustained at work, at war, or as a result of the negligence of others. It should be separated from any penal element directed towards the persons supposedly responsible for the accident or illness. It should continue until cure or death; unreasonable refusal of treatment or exploitation should, however, be penalised.

(v) Old age pensions must be raised. In view, however, of the reduced needs of old age, and of the likelihood of both partners being recipients, a figure below the national minimum wage for adults would be reasonable, and 30s. a week is suggested—for all as a right from the age of 65 onwards. The cost should be covered in the same way as the other allowances and benefits. An old person who continues to work is making a positive contribution to the wealth of the community and should not therefore be deprived of his pension or part of it.

(vi) In the case of all payments mentioned above, there must be no means test. Contributions must be made by all members of the community, and all must have similar rights. If a means test operates, or if there is any deviation from the minimum rights, the thrifty and industrious will be penalised, and relative poverty will continue to cause misery among those who have done least to deserve it.

(vii) A comprehensive system for the removal of poverty will only work in a community with a high level of production. There will be no room for idlers, slackers, and drones. So far from there being any large volume of unemployment, it may be necessary to penalise anyone who refuses to work. In the past, organised labour has demanded "the right to work." In the future, a system of social security will carry with it "the duty to work." The war is showing that the best method of dealing with the slacker or the absentee is by a committee of his or her fellow workers. We suggest that this system is capable of universal application. Furthermore, we consider that the best method of dealing with the neurotic or psychopath who seeks to exploit the health insurance system is for the patient and doctor both to give evidence before a workers' committee. We think that such committees are likely to arrive at common-sense conclusions which will carry much more weight with the patients than the most highly qualified medical tribunals.

The details of the organisation and finance of this social security scheme for the abolition of poverty will be discussed later (¶ 38–56).

21. We recognise that such comprehensive proposals carry with them a theoretical risk of excessive pampering and paternalism. These dangers have been put forward as an argument against most social reforms in the past hundred years; yet the same people who have put them forward, have often argued that a leisured class, existing on unearned income, is a cultural and social necessity. We consider that the conduct of British people in all social classes in the present war suggests that the virtues of courage, enterprise, and vigour (and indeed a certain number of vices) occur independently of the income level and the measure of financial security. We regard the theoretical risks involved in social security as well worth running.

V. Purchasing Power

22. Our present system of medical practice depends largely on the way the national purchasing power is distributed. Most wage earners contribute compulsorily to an insurance scheme which enables them to pay for medical attention during the time when they can best afford it—that is, when they do not need it. The dependants of the insured population, having individually small purchasing powers, pay small fees for the medical care they receive. The middle and upper income groups, a relatively small part of the population, have a much greater purchasing power. In return for larger—and indeed sometimes very large—payments, they receive slightly better medical attention. This Robin Hood system as it has been called has a certain rough and ready justice about it. But it will only work as long as the doctors who treat the poor at low rates are able to make up by treating the rich at high rates. If the rich lose their purchasing power, the doctors who depend mostly upon them (but who serve all classes) will be driven out of business. It so happens that this particular group of doctors—the consultant and specialist group—is of vital importance in the chain of curative medicine.

23. Purchasing power is, as it were, the mirror image of productive capacity. A nation can buy only what there is to have in the way of goods and services. If the amount of money available is pushed up beyond the productive capacity, purchasing power does not increase; instead the value of the money goes down. Sometimes the economic machine gets out of gear and the available goods and services exceed purchasing power. Unless purchasing power is then increased by the issue of new money, the value of the goods and services in terms of money falls and a slump sets in. It is extremely probable that in our post war economy, the Treasury and the Bank of England will see to it that purchasing power keeps strictly in step with productive capacity. It is equally probable that our productive capacity will be greater after the war than it is during it. The total national purchasing power will, therefore, increase. The important point to consider is how will that increase be distributed.

24. Broadly speaking, there are three possibilities:—

(i) Everyone will be richer.
(ii) The poorer will be richer, and the richer the same.
(iii) The poorer will be richer and the richer will be poorer.

There is a fourth theoretical possibility—namely, that the poorer will be poorer still and the richer enormously richer. This can be ruled out, as even if such a situation were to arise temporarily, strikes and labour troubles would rapidly reduce productive capacity and consequently the enormous riches of the rich.

25. We may regard it as reasonably certain that the poor will be richer. The real problem is what is likely to happen to the richer section of the community. The only answer we can give is to study the fate of the rich in a planned and controlled economy. The essence of sound planning is that necessities for all should precede luxuries for any. This will probably be achieved by a combination of:—

(i) Planned production, based on scientific assessment and social survey.
(ii) Controlled prices, with subsidisation if necessary.
(iii) Rationing of essentials in short supply.
(iv) Raising the purchasing power of the poor by:
  (*a*) Minimum living wages.
  (*b*) Family allowances.
(v) Controlled national finance, so that national purchasing power keeps in step with production.

26. There must obviously be considerable Government intervention in the industrial structure. Since the inherent value of national ownership is disputed, it will be more profitable to consider first the minimum amount of intervention necessary for a planned economy. If production is to be planned, the Government must decide what is to be made. It can, however, leave the making to private enterprise, though Government specification and inspection are desirable. If price control involves subsidy, as is now the case in the food industry, Government wholesale and distributing organisations are desirable if not essential. The control of national finance must aim at the issue of new money to supply the purchasing power for the results of new production, but must limit this issue so that inflation does not occur. If all prices are controlled and rationing covers all goods in short supply, the production of an excess of new money is quite harmless. It cannot be used to force up prices, or to deprive anyone of their needs. Its possessor is unable to spend it, and so either it is hoarded, or it is lent to the Government or to private organisations (banks or

companies) for new capital development We have postulated a condition where new capital development (i e , new industrial production) is controlled by the Government, so that an influx of new money will not lead to mushroom industries In a completely controlled economy, then, inflation is not a danger It will, however, be a very real danger if price control and rationing are half hearted The other important aspect of national finance is the imparting of purchasing power to the Government (supplying the national revenue) for carrying out all its works In a controlled economy, the methods which have proved successful in war-time would be equally successful Up to, and indeed over, half the revenue needed to supply the Government needs can be met by borrowing surplus profits and salaries from the public Some of this borrowing will be from individuals, but most of it will be from banks, corporations, and industrial concerns The rest of the Government's need will be met by direct and indirect taxation Though defence expenditure will be considerably smaller, social expenditure will be considerably greater So we can look forward to taxation continuing at a high level

27 Since a planned economy does not necessarily involve the abolition of private capital ownership, nor the imposition of taxes heavier than war-time taxes, there is no purely economic reason why the rich should not continue to have approximately the same incomes as in war time They are unlikely, however, to go back to peace time incomes, if only because the Government will continue to be a heavy borrower and will try to keep interest rates low Further, in a controlled economy, the opportunities for profit by speculation on the stock market will be decreased

28. There may, however, be political reasons why the incomes of the rich should decline If widespread nationalisation of essential industries takes place, compensation of owners will probably be with bonds carrying a low interest rate Further, the economic need for a rich capital-owning class will disappear, and political pressure against the unnecessarily rich will have sound economic backing Heavier taxation of high incomes will be practical, and may be thought desirable If this sequence of events takes place, the rich will be definitely poorer in a post-war society

29. *From the point of view of medical planning*, we must have a flexible system, capable of providing the whole community with everything medical that it needs, but also allowing the rich to pay more if they want to Under no circumstances are we justified in saying that the rich shall get better treatment than the rest, because they want to pay for it Only the best must be available for everybody

VI Distribution of Population and Reconstruction of Town and Countryside

30 In the past, the distribution of population has been uncontrolled by conscious planning It has not, of course, been fortuitous Industries have developed around raw materials or in suitable climates, and men have followed them Commerce has centred on good harbours Market towns have sprung up in agricultural districts In the past 20 years, a large part of the population has moved south away from the declining heavy industries to the new light industries But it has all been unplanned unplanned for strategic safety, industrial efficiency, transport of products, transport of labour to and from work, community life, and health and happiness of the workers, the managers, and the families of both The result is the most disastrous urban development in Europe The undoing of the work of the nineteenth century and the first forty years of the twentieth is the biggest task which will face the people of this country after the war

31 It is no part of our purpose to discuss town and country planning, except in so far as it affects the physical and mental health of the people With these in mind, we can lay down a series of elementary criteria which must be fulfilled in all new developments —

(i) There must be adequate accommodation for

(*a*) People who wish to (or have to) live by themselves (probably mainly in flats, flatlets, hostels, or lodgings)
(*b*) Married couples with no children, or very young children (probably mainly in flats)
(*c*) Married couples with children over 2 years (probably mainly in houses with gardens)
(*d*) Older married couples, whose children have left home (probably mainly in flats)
(*e*) The elderly and aged, widows and widowers (in part-service flats or cottages)

The proportions in each group, and the proportions within each group wishing different types of accommodation can be determined for each community by social survey methods

(ii) Workers must be housed within easy travelling distance of their work Every hour spent in travelling to work, and every gallon of petrol, is a waste of national productive capacity—that is, of the national wealth. Furthermore, by lengthening the working day, and by spreading droplet infection, it is endangering the national health

(iii) Everyone must be housed within easy travelling distance of the real countryside This means smaller cities, no ribbon development, and no suburbia

(iv) Families must be housed near schools, shopping centres, theatres, libraries, and clubs

(v) Rooms must be light, sunny, well-ventilated, warm, and sound-proof There must be an adequate choice for those who like small or large rooms, small or large windows No-one and no family should be condemned to live in the boxes which pass for rooms in many modern flats—unless they wish so to do There should no longer be an excuse for inefficient heating when gas, electricity, and piped industrial waste steam (as *installed in Detroit and the new Russian cities*) are universally practical

(vi) Every family must have its own lavatory, bath, wash-basin, and kitchen with sink

(vii) Labour-saving devices must be available to every housewife

(viii) Flat-dwellers living more than two floors off the ground must have lifts

(ix) The outside of every building must be planned for beauty and harmony, in keeping with its environment

32. There can be few people who would dispute the desirability of these criteria There are no physical difficulties *in converting them from paper to reality* The difficulties which stand in the way are our own selfishness, whether we be building society members, tenants, landlords, rate payers, or members of local or *national government Each of us has interests which* might suffer temporarily if thoroughgoing physical reconstruction were put in hand But each of us, equally, has far more to gain if we are prepared to take a long term view and act on it

33 Piecemeal remedies have been tried and have failed Radical cure is now necessary, and it calls for as much ruthlessness as did the first radical mastectomy All land and buildings will have to pass into the ownership, or at least full control, of the state , a possible mechanism would be a national land corporation with *the present inhabitants* becoming the state's tenants and the present owners receiving compensation Such a national land corporation would have to plan all development, urban and rural, industrial and agricultural, on a *regional basis Socially inefficient property* will, in due course, have to be destroyed as ruthlessly as the sanitarily condemned The scale of demolition will have to be enormous But if we can bring ourselves to the task, we have before us *the opportunity to* add to the world's loveliest countryside the world's finest towns

PART II

Paying For It

VII Present Methods of Payment

34. It is agreed that the best possible health services, both curative and preventive, shall be available to everyone. It is agreed that the nation as a whole can afford to pay for these services. It is also agreed that lack of capacity to pay shall not deprive anyone of the best. The major problem which must now be considered is how shall the total cost of these services be borne by the community. Before considering the amount of payment, method of payment will be discussed. At the present time money is withdrawn from the community for this purpose in different ways:

(i) By the direct payment of doctor's and nurse's fees, and contributions towards hospital costs. Often the fees extracted are below the market value of the services rendered. This is counterbalanced by the fees charged to better-off patients which are above the market value of the services.

(ii) By insurance payments, made by patients when they are well, patients' employers, and the state, which reach the doctor as capitation fees. The state's contribution is derived from general taxation, direct and indirect, which falls on doctors and patients alike.

(iii) By rates, supplemented by state block grant (again from direct and indirect taxation) which pay for environmental health services, the work of medical officers of health both environmental and clinical, and the municipal hospital services.

(iv) By private contributions to hospitals and other insurances (hospital savings associations, the "Public Medical Service," &c.), and by charitable gifts to hospitals.

(v) By miscellaneous forced contributions from employers (workmen's compensation) and guilty parties in *accidents* (or their insurance companies), and other minor sources.

(vi) By direct payment out of state funds, to provide the Emergency Medical Service.

35. In favour of these mixed methods it is urged that they encourage efficiency through freedom of choice, as well as individuality. Against them it is urged that they are unjust, inefficient, and unnecessarily costly. It is fair to say that those who favour the present mixed methods usually couple this with the advocacy of additional direct state contributions to the particular type of organisation with which they are associated.

36. If we examine each of these methods of payment, we find substantial agreement on the following points:

(i) The *direct payment of fees*, whether these cover costs or are a contribution to cost, falls on the patient when he or she can least afford it. Even among the small proportion of the population with incomes of over £1000 a year (before the war, approximately 1·5% of the total incomes), surgeon's bills and nursing-home fees add to the anxieties of illness.

(ii) The direct payment system retains a certain measure of popularity both among doctors and patients, for the following reasons:—

(*a*) It gives doctors a sense of dependence on themselves and their own abilities, and of independence from the state or any wage or salary paying organisation.

(*b*) It makes doctors feel that the harder they work and the greater their skill, the more they earn.

(*c*) Many also feel that the abolition of the direct payment system would substantially reduce their incomes.

(*d*) It gives patients who can afford it a sense of satisfaction and independence at being able to purchase medical aid with as little interference as they purchase a suit of clothes.

(iii) The sense of independence both among doctors and patients is a healthy phenomenon. It is, however, retained to a large extent under the panel system as also is the *relationship between amount of earnings and amount of work*.

(iv) The *panel or insurance* system has the serious disadvantage that it does not cover the dependants of wage-earners, or the upper and middle income groups, nor does it provide specialist or institutional treatment for its subscribers. These are defects of scope rather than inherent defects. On the other side, it has much to its credit:—

(*a*) Though the "free choice of doctor" is largely illusory, nevertheless it is felt by both doctors and patients to exist. The knowledge that patients *may* leave, if they wish, helps to keep the less conscientious doctor up to scratch. From the patient's point of view, a doctor—or a hospital—chosen, or felt to be chosen, is likely to excite greater faith than one imposed. It is worth pointing out that initial freedom of choice is much less important than freedom to change later. "You don't know a rotten apple till you've bit it."

(*b*) The actual weekly payments by the patient are a strong factor in retaining self-respect. The panel is not a free service but a mutual benefit arrangement, in which services received do bear a relation to payments made.

(*c*) The panel does succeed in allowing the cost of sickness to be borne during the time that the patient is fit.

(v) The main disadvantages of the panel system (apart from its limited scope already mentioned) are:

(*a*) By levying a contribution from employers, it acts as a tax on industry, and acts in some measure as a deterrent to industrial expansion.

(*b*) The cash and other benefits given by the different approved societies are extremely unequal and the sickness benefit in no way approximates to a living wage.

(*c*) Approved societies have been found to be as wasteful a method of administering public funds as any yet devised. In the period 1934–37 the Ministry of Pensions scheme distributed £42 million, at a cost of £0·75 million. The various societies and insurance companies had the following record:

	Benefits distributed (*million*)	Administrative costs (*million*)
NHI	£33	£6
Workmen's compensation	£9	£4
Industrial insurance	£33·5	£22

(*d*) The approved society collectors are presented by the state with a right of entry, and consequently an opportunity for touting, in every working-class household.

(vi) *Rates* as a method of payment for any service have little to commend them. In their favour, it is stated that they serve to stimulate local interest in local government, and they have the advantage of familiarity. The case against them is as follows:

(*a*) The richer a community, the more it can afford to pay in rates, but the less it needs the services which the rates supply. Conversely, the poorer a community, the less it can afford to pay in rates, but the more does it need the rate-paid services. Rates, then, are a basically unfair form of community taxation.

(*b*) Rates are based on the value of the home or property, and are roughly proportional to the rent. The poorer the person, the greater the proportion of his income which goes in rent, and consequently the greater the proportion which goes in rates. Further, the larger the family, the larger the house, and consequently the larger the rates. Rates, then, are also a basically unfair form of individual taxation.

(*c*) If a property is improved, its rateable value is increased. Hence, rates are a tax on enterprise, and inhibitors of improvement in environmental conditions.

The central government has attempted to mitigate the evils of rates, in peace-time, and to a greater extent in war-time, by the system of block grants out of national funds. These have enabled some poor communities to have certain necessary services which they would not otherwise have been able to afford. But the essential injustices of rates remain.

(vii) *National taxation* and *national credit* are the most efficient sources. The *income-tax*, in spite of its unpleasant associations and some technical deficiencies, is the fairest method of taxation so far devised. Deduction at source was a great advance. Its only substantial disadvantage is the lack of connexion in the mind of the payer between his contribution and the services he receives in return The super-tax and death duties are merely an extension of the income-tax principle Indirect taxation—purchase tax, customs duties, &c —should be regarded rather as a method of restricting consumption than as a source of revenue In the interest of good citizenship, indirect taxation should be avoided altogether as a source of revenue In a democratically mature society, the tax-payer should be clearly aware of how much tax he is paying National credit provides the Chancellor of the Exchequer with a convenient method of controlling the national income to the national advantage

(viii) *Private insurance arrangements,* either in the form of hospital savings associations or private companies offering health insurance are costly in collection, of varying degrees of efficiency, and usually cover only *part* of the cost of treatment received—often to the distress of the patient when he discovers this

(ix) *Workmen's compensation* is an attempt to saddle employers with the cost of maintaining employees suffering from the effects of occupational accidents In fact, employers insure themselves to cover the risks they run, and compensation often operates against the interest of the workman it aims to help Its whole emphasis is on cash compensation rather than recovery At present, the only substantial gainers are the insurance companies In any complete system of health insurance, workman's compensation would be unnecessary The employer who neglects safety devices—or the motorist who drives to the danger of the public—should be dealt with by the ordinary processes of the law

(x) *Charitable contributions* are quite inadequate to maintain any complete health service As a major source of income they have the following disadvantages

(*a*) Contributors often give most generously to those institutions which have prominent sites—and are forgetful of those situated in poor parts of our cities, or in rural areas

(*b*) Sentiment rather than reason often induces contributions The blind, children, and animals are widely supported, the chronic sick, the senile, and the neurotic seldom

(*c*) Givers of large gifts often prefer to erect new buildings rather than to endow existing ones Yet in all enterprises, it is the people who work in the buildings rather than the buildings themselves which matter

To these practical disadvantages, it is sometimes added that the flavour of charity is repugnant to its recipients, and damaging to its dispensers The evidence on these points is strongly charged with emotion We, however, do not feel strongly If rich people continue to exist, and if rich or poor wish to make gifts towards the cost of the national health services, we think these should be gracefully and gratefully received But the giving of gifts should confer no rights on the donor, indeed, a gift which conveys a right bears little relation to charity, at any rate in the Christian sense The sale of the office of governor of an institution, in return for a contribution of a minimum size, should be discontinued

37 As a rider on the present situation, the following example from the practice of a North country GP may be quoted —

> "I have one family who is attended under the following heads the father is an NHI patient, the mother has always been a private patient and prefers this, the children are attended under the Public Medical Service (the parents felt they could not afford bills for the probable bouts of infectious illnesses), and there is an old man in the same house attending under an old club scheme (the Free Gardeners) All patients in this variegated collection actually get the same attention The children are examined at school and sometimes get advice at the school clinic (until recently no note of this was ever sent to me), they also get dental and ophthalmic treatment through the school The father's approved society is "broke," so he and the mother have to pay for their own dental and ophthalmic treatment The old man is toothless and has been for a long time, and does not care for reading, so this problem does not worry him The family subscribes to the two local voluntary hospitals, but if any of them have skin complaints, they have to go to the municipal hospital, as neither voluntary takes skin cases The father also subscribes to an ophthalmic hospital outside the town and an hospital in London, this is quite unnecessary as local voluntary hospitals have efficient ophthalm orthopædic departments

VIII Paying in the Future

38. The ideal method of payment should hav following characteristics —

(i) Members of the public should have the feelin they are themselves paying for the services they re and they should have a measure of freedom in ch who shall give them these services

(ii) Doctors should retain, as far as possible, the of dependence on their own efforts, and of indepe in their relationship with the state

(iii) All classes should be able to pay for services they are well, and should be freed from the bur payment during and after illness

(iv) Payments made during times of health cover all services needed at any time

(v) There should be no question of persons wis pay private fees at the time of illness receiving pr tial treatment over patients being treated on an ins basis

(vi) At the same time, some people in the upper groups do wish to continue private contract for treatment It should be possible for such people out of a part of any national insurance payment, cease to be entitled to medical benefits

(vii) The amount of insurance payments should b on capacity to pay—i e, on some income assessme

(viii) The burden of health services should be re from the rates

(ix) The nature of the payment should be as and as comprehensive as possible

(x) There should be no levy on employers or other isolated section of the community

39 It is therefore proposed that every wage salary earner, or person in receipt of any form of or unearned income, should compulsorily pay a *social security insurance contribution.* In return h should be provided with —

(i) Complete treatment for all forms of sickness, ining in ing rehabilitation and if necessary tra ributor occupation, until recovery, for the contr to cho his dependants, the contributor to be free £500 own home doctor Persons earning over ontrib should be permitted to opt out of ⅛ of their co nefit being then no longer entitled to medical be res

(ii) Provision of specific prophylactic measu ch contributor and all his dependants, as well as su and supervision as is necessary to maintain health

(iii) Adequate cash sickness benefit for the con until he or she returns to work A provisiona would be £2 a week for a single man or woman, whose wife is employed, and £3 a week for a marr whose wife is occupied domestically Adequate allowances would make additional payments for unnecessary, though maternity benefit should co and should be supplemented by benefits in kin discourage the unnecessary use of hospitals and tions, patients should contribute from their cash s benefit the cost of their home maintenance, say or 10*s* a week Safeguards against abuse discussed later (¶ 49–56)

(iv) Adequate cash unemployment benefit, same scale as sickness benefit

(v) Adequate old-age pensions, and pensio widows on a similar scale

(vi) Burial allowances of £20 to the nearest of all persons dying There is much to be said nationally owned and operated funeral, cemeter crematorial service, at the least, drastic of existing services should be introduced

(vii) Adequate family allowances, at a minimu of 10*s* a week for every child who is not earning, inc orphans

40 In no circumstances should means tests o Otherwise the scheme ceases to be an insuranc becomes instead a state dole Further, a mean

discourages thrift and individual enterprise, and it transfers the burdens which insurance schemes seek to avoid to the shoulders of others who may themselves then be reduced to the poverty level Only by such a complete social security insurance scheme will the evil effects of poverty on mental and physical health be abolished At the same time, there should be an upward operating "Needs Test," to permit supplementary or extraordinary payments in special circumstances

41 It is proposed that payments should be graded according to incomes A basis for such grading is provided by the Ministry of Labour's family budget survey[8] of 1937–38 —

(i) In 8905 industrial and commercial working-class households, averaging 3 77 persons per household, the average total weekly expenditure was 85*s* Of this, the following figures were relevant to the present inquiry

	s	*d*	% of total expenditure
Doctor, dentist, nursing, medicine, &c	1	8	2 0
National health, pensions, and unemployment insurance	2	0¾	2 4
Other insurances and pension funds (excluding trade union subscriptions)	2	4½	2 8
	6	1¼	7 2

(ii) In 1491 agricultural working-class households, averaging 3 79 persons per household, the average total weekly expenditure was 57*s* 4*d* The comparative figures with those given above are —

	s	*d*	% of total expenditure
Doctor, dentist, nursing, medicines, hospital funds, &c	1	2½	2 1
National health, pensions, and unemployment insurance	1	7¾	2 9
Other insurances and pension funds (excluding trade union subscriptions)	1	5¼	2 5
	4	3½	7 5

(iii) One other cost in these family budgets would in fact be covered by a social security payment—namely, that portion of the rates which covers municipal health services, poor relief, and education The average payment in the industrial group on "rents plus rates" was 10*s* 8*d* (12 5%) In the agricultural group it was 4*s* 9*d* (8 3%)

The Bristol Social Survey[9] shows that the average breakdown of the 10*s* 8*d* "rent plus rates" figure is 2*s* 4*d* ordinary rate, 4*d* water rate, and 8*s* rent From the figures given in the annual report of the Ministry of Health for 1938–39,[10] it can be calculated that of the 2*s* 4*d* ordinary rate, 3*d* goes towards local authority health services and 3*d* towards poor relief Thus an additional payment of 6*d* a week (or 0 6%) can be added to figure for health and insurance expenditure in the industrial group Assuming that a similar percentage of agricultural expenditures is disposed of thus, the total percentage figures are —

	%
Industrial	7 8
Agricultural	8 1

42 We can assume therefore that a social security insurance contribution not exceeding 8% of the income would not impose an appreciably greater burden on the wage earner than the present arrangement Since however it would give greatly increased benefits including family allowances, a payment approximating to 10% would probably be accepted Such contributions should be free from income tax

43 Bearing in mind that the smaller the total income, the greater is the burden of a percentage payment, the following rates of payment are proposed

Income level per week £	*s*	*d*	£	*s*	*d*	Payment per week *s*	*d*
1	0	0—	1	9	11	1	6
1	10	0—	1	19	11	2	6
2	0	0—	2	19	11	3	9
3	0	0—	3	19	11	6	0
4	0	0—	4	19	11	8	0
5	0	0—	5	19	11	10	0

Income level per year £	£	*s*	*d*	Payment per quarter £	*s*	*d*
300—	349	19	11	7	8	0
350—	399	19	11	8	15	0
400—	499	19	11	10	0	0
500—	749	19	11	12	10	0
750—	999	19	11	16	5	0
£1000 upwards a year				25	0	0

44 Each individual should decide whether he wishes to make his payments weekly, monthly or quarterly Changes in methods of payments should be allowed only once a year It should be possible for anyone wishing so to do to increase his contributions by a set percentage, say 25%, and in return to receive an extra degree of privacy when undergoing institutional treatment and exemption from clinical demonstration Similarly a voluntary increase in contributions of 25%, 50% or more should entitle the contributor to correspondingly increased benefits and pensions People with existing private insurance arrangements should be allowed to transfer their policies to the National Social Security fund, if they wish to incorporate existing premiums into social security premiums

45 Payments should be made by the purchase of stamps The stamps should indicate clearly the nature of the transaction, thus, they should bear the words "Social Security Insurance—Health—Unemployment—Old age—Family" New stamp books should be issued annually, on receipt of the previous book fully stamped, and certified correct by the employer Different coloured stamps would be issued free during periods of sickness or unemployment to show that the holder was excused payment Benefits should only be issued on production of the book fully stamped to date, the one exception to this would be medical emergency benefit In the front portion of the book, or (in view of the secrecy with which many people like to surround their incomes) in a separate book, should be a space in which the employer should enter the amount of wages or salary at the time of payment, those living by fees or income from other sources should enter the figures themselves, false entries to be punished by heavy penalties When the stamps were purchased, this statement of current income should always be produced

46 The funds thus collected should be handled by a statutory National Social Security Board, similar to the present Assistance Board, whose work, funds, offices and staff it should take over It would also absorb the Ministry of Labour's department for unemployment insurance, the pension and insurance work of the Ministries of Health and Pensions, and the work of the approved societies The minister responsible for the policy of the board in its broadcast outline should be the Minister of Health He should, however, have no control of or responsibility for day-to day working As soon as possible, the Social Security Board should open offices throughout the country, as widely diffused as post offices, Assistance Board offices would provide a nucleus for these The offices should both sell stamps and issue cash benefits Pending their establishment, both these functions should be performed by post offices

47. Unemployed persons seeking benefit should require to have their income records stamped at employment exchanges or bureaux For the sick, medical certificates would be required For family allowances and old-age pensions, birth certificates would be required in the first instance

48 We attach great importance to the type of officer in charge of such Social Security offices Such officers should be, as far as possible, trained social workers Anything smacking of poor relief public assistance, or the dole, should be got rid of The atmosphere should be that of a people's bank or a mutual insurance office, where, in addition, the complexities which confuse the

(iv) Income-tax is, in fact, even more fair than the graded payments proposed as its rise is gradual and not in a series of steps

58 Against the proposal, we set the following —

(i) The unpopularity of income-tax arises in part from the elaborate machinery devised to make it completely fair It is only by payment on one's previous year's earnings that the individual obtains maximum allowances Our proposal of current weekly payments, fluctuating with current earnings, is likely to be more welcome to the wage-earning public

(ii) The mere fact that payments were made *to* the same place *from* which benefits are received would have great educative importance We think that money paid into the National Exchequer pool, no matter how much educative publicity there is, will never be as closely linked with benefits received as under a more direct national insurance arrangement

(iii) If the health and security funds are to be derived entirely from the Exchequer, the dangers of Treasury control will be greatly increased The universities have not lost their autonomy by deriving two-thirds of their income from the Exchequer The assistance board, on the other hand, is virtually a part of the civil service

For these reasons, we reject the alternative proposal of a specific addition to income tax payments

IX The Balance-sheet

59 The national balance sheet for the health and social security services must be largely an affair of estimates for no exact figures are available for many of the items It is easier to estimate the volume of financial disbursements under a revised social security service than the cost of an adequate medical service The assumptions on which the latter are based are as follows —

(i) There will be no great change in the *average* untaxed incomes of doctors

(ii) There will be a considerable increase in the *average* rates of pay of nurses

(iii) There will be a very considerable capital expenditure on new hospital and institutional construction

(iv) There will be a reduction in all running and administrative costs as a result of large scale planning and organisation

60 The balance sheet given consists of five parts —

(i) The approximate total cost of the medical services, excluding the environmental health services, such as housing, water-supply, and sewage, in the year 1938-39 (about £160 million)

(ii) The total cash disbursements for sickness in the same period (about £43 million)

(iii) The cost of unemployment and other social relief services in the same period

(iv) The estimated cost of a complete medical and social security service as described previously

(v) The yield of the measures proposed to meet this cost

(i) *Present annual cost of the medical services* (1938-39)

	£ million
Voluntary Services	
Hospitals	17
Convalescent homes	2 2
Homes for chronic sick	3
District and other nurses	2
Other voluntary institutions and services	1 8
	23 3
Municipal Services	
General hospitals	7 5
Fever hospitals	4 2
Tuberculosis services	4 8
Mental hospitals and mental deficiency institutions	14 5
Venereal services	5
Maternity and child welfare services	4
School medical service	5
Poor law medical service	8
Other services	3 5
	52
Doctors' fees and salaries	
National health insurance payments	8
Salaries (apart from those paid by hospitals)	2
Private fees	38
	48
Dentists' fees and salaries	10
Masseurs' fees and salaries	2
Patent medicines	20
Dispensed medicines	5
	37
	160 3

(ii) *Present annual cash disbursements for sickness* (1938-39)

	£ million
National health insurance benefits	18
National health administrative costs	6
Workmen's compensation payments	12
Private sickness insurance	7
	43
Total annual health bill (excluding purely environmental services)	203 3

(iii) *Present annual cash disbursements for unemployment and other social relief services* (1938-39)

	£ million
Unemployment insurance	62
Unemployment assistance	36
Public assistance	46
Widows', orphans and old age contributory pensions	49
Non contributory old age pensions	48
	241
Total annual "social security" bill (including health)	444 3

(iv) *Estimated annual cost of proposed national medical services*

	£ million
Present cost	160 3
Additional cost of nursing services	40
Additional capital expenditure on new building	40
Saving due to large scale buying and improved administration	less 10
	230 3

Estimated annual cost of proposed social security services

Sickness benefit (assuming no change in amount of sickness)	82 5
Unemployment benefit (assuming 500,000 unemployed and ⅔ of them married)	70
Old age and widow's pensions (assuming 3 5 million old people over 65 and 0 75 million widows)	351
Family allowances	308 5
Burial allowances (assuming £20 per head for 500,000)	10
	822
Proposed annual total health and social security bill	1052 3

(v) *Estimated annual yield of proposed social security contributions*

Weekly wage	Weekly contribution	Persons	Total of contributions
£ s d £ s d	s d		£
1 0 0—1 9 11	1 6	1,734,600	6,764,940
1 10 0—1 19 11	2 6	2,649,400	17,221,100
2 0 0—2 19 11	3 9	1,395,500	13,606,125
3 0 0—3 19 11	6 0	10,269,100	160,197,960
4 0 0—4 19 11	8 0	599,600	12,471,680
5 0 0—5 19 11	10 0	900,000	23,400,000

simpler citizen in the modern world can be straightened out They should also be centres of local social intelligence, both collecting and giving out information They would thus serve to keep the board in touch with the problems of the public, and the public informed of the services available

49 The board should be administered on a regional basis Local advisory committees in each local authority area, with representatives of local authorities, local political parties, trade unions, and other groups, would form a further link between the board and its public These committees might well play an important part in arbitrating on doubtful cases, whether unemployed or sick The committee might, however, delegate its functions in this respect to a small arbitration tribunal of 3, a chairman and a workers representative from the committee and representative of the Social Security Board Such an arrangement has worked well in the organisation of the Assistance Board

50 The *method of arbitration* proposed would be substantially the same whether the doubtful recipient was unemployed or alleged to be sick If he persistently refused to work in spite of the offer of work, or continued to simulate ill health when in fact he was fit, the employment exchange manager or the doctor in whose care he was, should notify the Social Security Board officer He or she would investigate the social circumstances, if necessary by a home visit, and should then bring him before his local tribunal In a medical case, a medical assessor should assist the tribunal, which should be furnished with a medical report from the patient's doctor The worker going before the tribunal should be permitted to take a representative to speak for him The tribunal should have before it a report from the employment exchange, the previous employer, and the social worker of the Social Security Board In medical cases, a medical report would replace the first two The tribunal would not have the power to reduce benefits (as these are intended to be based on the cost of living) Its power would be to give a *direction* as to work Failure on a worker's part to follow such a direction to work would render him liable to be brought before a county court or a stipendiary magistrate's court, and punished Such punishment would automatically deprive the recipient of his benefits, leaving, however, his dependants unaffected The worker's refusal to work would thus constitute an appeal to a legal authority who would have to hear both his case and the case of the tribunal An official of the Social Security Board wishing to mitigate a ruling of a tribunal should be able to appeal to his or her regional chief

51 The position of the partially disabled person has still to be considered The completely disabled person will be adequately covered by the sickness benefits of the Social Security service Partial disablement may arise from illness (e g , tuberculosis, cardiac disease, arthritis), or accident (on the road, in the home, at work, or in the Forces) At present financial assistance for partial disablement bears little or no relation to needs Its source may be from a Service pension, an employer's or a motorist's insurance policy, the pocket of a private individual against whom damages are given in the courts, or public assistance Victims of accident are, as a rule, in a better position than victims of disease The aim of the Social Security service must be to maintain the patient and his family until he is fit for work The aim of a national medical service must be to make every patient, whether sick or injured, fit for work But there will still be a certain number of patients, fit for light or special work on short hours, who will never be able to take up their old occupations

52 The social problem presented is that of training and placing in suitable work, a task which might well be linked with that of physical rehabilitation The disputed question of the special colony or settlement as opposed to the open field of labour will be considered in a later section The monetary problem, we propose, should be solved in the following manner

53 If the worker's salary in his new occupation is less than his previous salary, it should be supplemented by a grant, its amount being the difference between his old salary and his new one, with, however, a maximum grant of the total of full weekly sickness benefit At the end of a year his position should be reviewed, both as to degree of any further recovery and amount of grant—the same principles as before being applied, after allowing for any increase in salary which may have occurred Thereafter the grant should be stabilised, so that further increments in salary may lead to a true increment in earning The partially disabled worker will thus be helped over the difficult transitional period, and once the grant has been stabilised, he will have a financial incentive to become a productive and useful citizen

54 The risk of exploitation by the compensation hysteric will still exist, but a properly organised rehabilitation service, including a psychiatric rehabilitation service, should greatly reduce this It is, however, important that justice should be done to every genuinely disabled and partially disabled person, even if a certain number of hysterics gain thereby Incidentally, the recurrent prospect of the physically fit hysteric appearing before a tribunal of his social peers is likely to have a healthy deterrent effect

55 An examination of these proposals reveals a number of advantages —

(i) Sickness would have no advantage over unemployment as a source of income So if a person had no work waiting for him, continued sickness would have no cash incentive

(ii) The criterion for action would be in all cases refusal to work when physically fit

(iii) The decision would be taken by a committee or tribunal of the workers own peers, and as such would be more likely to be generally accepted than any that a medical or legal panel might make Tribunals would rapidly acquire skill in identifying scrimshankers At the worst, when a worker had appeared before them on two or three occasions persistently refusing to work, they would begin to see through him

(iv) The whole of workmen's compensation, with its burdens on employers, its injustices to workers, and its openings for exploitation, would lapse

(v) The whole of public assistance, poor relief, and unemployment assistance, with its social stigma of the dole, charity, and the rates, would vanish

56 In practice, at the end of this process, there would remain a small body of men and women, probably mostly psychopathic, who preferred gaol to work, at present termed unemployables or tramps It is a difficult matter to decide whether these should be coerced into colonies where they may contribute at least some labour towards their cost to the community, or should be allowed to pursue their way around the country from casual ward to casual ward Since we believe in the liberty of the subject—even to the " hobo "—we favour the continuance of a limited number of casual wards, supported not from the rates but from Social Security Board funds

57 Before closing this account of our proposals for paying for health and social security, we must mention an alternative method which has been suggested—namely, a specific addition to everybody's income tax payments In favour of this, it is pointed out that —

(i) The machinery of collection already exists , to build up a duplicate machine is unnecessary

(ii) Deduction at source reduces to some extent the pain experienced in direct tax payments

(iii) While the odium which surrounds the income-tax is admitted, our aim should be rather to clarify in the public mind the link between tax payments and services received, than to construct an alternative to avoid that odium

71 The pull between the technician and the administrator is strikingly illustrated in the civil service. In the Ministry of Health, the doctors and engineers have remained ultimately subordinate to the pure administrators. Similarly, in municipal hospitals, clinicians are subordinate to administrators, though often these administrators have previously been clinicians. For this reason, the best technicians have often refused to serve in such organisations, and those who have served have become frustrated and disillusioned. We think that the answer to this problem is to be found in a study of parallelism and hierarchy.

72 Parallel organisations are those in which authority (or a great part of it) is divided among many persons of equal rank. Hierarchical organisations are those in which authority is concentrated in one pair of hands, below which are others, having again others below them. In practice, neither exists in pure form; even the most parallel organisations have some measure of hierarchy and vice versa.

73 Broadly speaking, the more automatic a job, the greater must be the degree of hierarchy. A clerk adding up figures, a mechanic working a mass-production machine, or a typist copying shorthand must be supervised—not always, or indeed often, to check the actual performance, but to allocate the work to be done. Similarly, the more creative a job, the greater must be the degree of autonomy, which can only be obtained by parallelism. A hierarchy of artists need only be mentioned to demonstrate its absurdity. Yet an organisation of artists, whether for the holding of exhibitions or the production of a Walt Disney cartoon, is a practical proposition. An organisation of technicians may necessarily be hierarchical, for example the teams necessary to build a spitfire or remove a cerebral tumour. But most of the practice of medicine is still the application of individual judgment to the individual case. And, as long as this is so, parallelism as a dominant feature is desirable. But while parallelism among practitioners should be the rule, it does not follow that it is the final word in the medical administrative set up.

74 Some of the inherent advantages and disadvantages of the two forms of organisation will now be considered in turn:—

The *parallel organisation*—

(i) Opportunities of occupying senior positions, with a large measure of responsibility, are greatly increased. The chances of getting such a position at a relatively early age are also greatly increased. As a result, the presence of one able man in an organisation does not discourage others from entering it. Responsibility is achieved before age has sapped initiative and converted enthusiasm into disgruntlement with superiors. And a wide range of talent have the chance of liberal and varied expression. The merits of competition, such as they are, are also given free but not destructive play.

(ii) In organisations where members are required to display individual responsibility to others, it is particularly important that they should not be denied that responsibility themselves. To expect a person to bear the full weight of the troubles of others, while denying him the right to stand upright and foresquare himself, is as unwise in theory as it is unsatisfactory in practice.

(iii) By the parallel system of organisation, the dangers of bad appointments are minimised.

(iv) In all human communities, there are squabbles, bickering, and ill-feeling. Among equals these are less damaging to others, and less likely to lead to warping of character, than among superiors and inferiors. In hierarchies, the dissatisfied junior will appeal in the last resort to authority above his senior in the hope of displacing or replacing him. Thus, the apparent stability of a hierarchy is continually menaced, or, in minor key, administrative channels may be continually blocked by personal animosities. In a parallel organisation, the fact that two seniors are not on speaking terms is of relatively little consequence.

(v) The largest disadvantage of a parallel organisation is a certain difficulty in pure administration. Thus, it may be difficult to arrive at a policy decision, and once it has been arrived at, it may remain distasteful to some of the parallel seniors; their refusal to implement it is rendered easier by the absence of hierarchical control. This advantage may be reduced by placing administrative responsibility on one member of the parallel organisation, while keeping his status equal with his fellows. His directions must then be translated to his colleagues by tactful persuasion rather than forcible coercion. In a highly individual technical occupation, such as medicine, the refusal of senior members may, however, have inherent virtues. Time may prove the rebel right and the conformers wrong. This proof is likely to lead to correction quicker if accompanied by practical demonstration.

75 The *hierarchical organisation*—

(i) In a salaried organisation, it is usually cheaper to pay one man a very high salary, and proportionately lower salaries as one goes down the hierarchy, than to pay a number of men reasonably high but equal salaries.

(ii) If one is fortunate enough to have at the head of one's hierarchy an administrative genius, who also has wide human sympathies, he may produce a machine which works more happily and more smoothly than the best parallel organisation. But such men of genius are rare. If, therefore, an organisation needs only a single national head, a hierarchical appointment is justified. If, however, multiple local heads are required, parallelism has a better chance.

(iii) A mediocre hierarchical head—the usual situation—is in an unhappy position. He is responsible for all the activities of his subordinates, the great majority of which he cannot supervise. As a result he tends to sacrifice initiative to safety. His administrative superiors are usually themselves paper-workers. So he tends to sacrifice true efficiency to paper efficiency. "It doesn't matter if the patient dies, so long as he does it on the right forms."

(iv) His powerful position vis-à-vis his subordinates tends to produce in him dictatorial traits—a dislike of criticism, self-satisfaction, and parochialism.

(v) The senior workers in a hierarchy suffer from all the disadvantages which are avoided in a parallel system. Years of subservience turn their minds away from their work; they may preserve social equilibrium by concentrating on hobbies, sports, or pastimes, or they may become embittered misanthropes, or scheming intriguers, assiduously seeking out influential people and canvassing committee members.

76 The vivid contract between the parallel and the hierarchical systems is well seen in medicine. In the voluntary hospitals, and in general practice partnerships, the parallel system has been working with great success for many generations. The defects of these organisations are due to other factors. In the municipal and national medical services—e.g., the forces, the prison service, and the Ministry of Health—hierarchies have been the rule, and as a result second-rate rather than first-rate personnel has been the general rule. The parallel system makes the administrator equal with, and not superior to, the technical worker—whether clinician, laboratory worker, or teacher. The hierarchical system limits the opportunities of advancement of the clinician and confines the prizes to the administrator. Ultimately, it is on technical rather than administrative skill that the treatment of the patient depends; so technical skill should receive at least equal recompense with administrative ability.

77 It is possible that the initiative of the private business concern as contrasted with the government department may be due not to the inherent virtue of competition and private enterprise but rather to the existence of a controlling board of co-equal directors some of whom are usually technical experts.

Annual salary			Quarterly contribution			Persons	Total of contributions
£		£					£
300	—	350	7	8	0	250,000	7,400,000
350	—	400	8	15	0	152,000	5,320,000
400	—	500	10	0	0	70,000	2,800,000
500	—	750	12	10	0	760,000	26,000,000
750	—	1000	16	5	0	160,000	10,400,000
1000 and upwards			25	0	0	310,000	31,000,000
						19,010,200	316,581,805

Assuming that half those earning over £500 per annum elect to deduct ⅛ of their premiums, so as to arrange privately for medical treatment, £8,425,000 must be deducted—

less £8,425,000 = £308·7 million

X. Bridging the Gap

61. Figures so colossal as these mean little in isolation. They must be seen in the perspective of the total national income. The national income is defined as the money value of all the goods and services received by the people of the country each year. It is a money measure of the wealth of the country in terms of energy expended, apart from raw material possessed. In fact the acquisition of raw materials invariably involves the expenditure of energy—either in mining or growing them, or in manufacturing articles which may be handed over to those mining or growing them in exchange.

62. Before the war, our national income was roughly 4½ thousand million pounds. Since the war, it has increased by over 1¾ thousand million. This does not, however, represent an increase in real wealth, since nearly 60% of our goods and services are being used to defend the country rather than enrich it. Perhaps 3½ million people are devoting their time entirely to active war service, and at least that number to the production of munitions; against this, about 1½ million unemployed people are now at work, as well as a very large number of previously unoccupied women. In addition, all those who are working are probably working a little, but only a little, harder. Lease lend food and other material is also adding to our national income at no effort to ourselves. The cash value of this effort does give a measure of potential national income if it were all applied to peace-time purposes, though one must allow at least ¾ thousand million for rise of prices and inflation.

63. Our proposed health and social service scheme costs about 1000 million, or under ⅙ of our present nominal or potential real national income. Even if this were a withdrawal from the national income, a total loss as it were, we consider it is not an excessive price to pay for the abolition of poverty, and economic and medical insecurity. But it is *not*, in fact, a withdrawal from the national income but an orderly redistribution within it.

64. Our proposed social security contributions would yield about 300 million pounds. The remaining 700 million would have to be met by direct contribution from the Exchequer. It is worth noting that between 1926–38, 63·5% of all state income maintaining payments (under national health insurance, and unemployment, war and other pension schemes) was met out of taxation and not by the contributors.[11] We propose that the figure should instead be 70%. It is worth reiterating here the reasons why the whole sum should not come directly from the Exchequer; we consider that there should be a direct link in the minds of everyone between contributions paid and benefits received, and because the corporations should be free from detailed Treasury control.

65. The finding of this 700 million presents considerably less difficulty than the financing of the British national war effort; 11 million per day are being spent directly on war purposes; 700 million per annum is something under 2 million per day.

PART III

Running the Show

XI. Principles of Administration

66. The scientific study of administration is in its infancy. Scientific methods are more easily applied to material objects than to sociological ones. As a result, technical achievements have outstripped administrative organisation in local, national, and international spheres. In spite of this, technicians who have been forced to work in large organisations have remained inferior in status to the administrators. Science begins by observation and the classification of experience. Our proposals for health administration will be preceded by an analysis of past experience in both administrative and technical organisation. All new administrative proposals should be regarded as scientific experiments, and ours are no exception. Each phase of their operation should be watched carefully and modified or altered as proves necessary.

67. In past times, in Britain, laws were made by the nationally elected legislature, applied by the permanent executive, and interpreted when necessary by the independent judicature. This worked well as long as laws prescribed only conduct. In recent years, however, they have increasingly prescribed services to be performed by the state for the community. In the prescription of services, the legislature cannot do more than lay down principles which it wishes to be applied. In the application of these to individual cases, decisions have constantly to be made and rules of behaviour laid down. Such rules cannot be appealed against before the judicature unless they conflict with the principles defined by the legislature. Such rules are described as "legislation by the executive." Since this is a cumbersome phrase we propose to describe it as "direction."

68. No one who has had much experience of large administrative machines denies that direction is necessary inside a broad policy. The disputed question is rather who should give the direction. At present, it is given in four main ways:—

(i) By an executive Ministry of State, immediately responsible to Parliament, acting directly.
(ii) By the same, acting through locally elected authorities.
(iii) By a statutorily appointed public corporation.
(iv) By a coopted or created commercial company or private body—e.g., the insurance companies involved in the National Health Insurance Acts.

69. Each of these has worked well on occasion though each has disadvantages. The directly democratic nature of direction by ministries responsible to parliament, and by elected local authorities have made these methods popular in Britain. But as the technical and organisational complexities of the services to be supplied have increased, local units have been found to be increasingly inefficient. Further, day-to-day inquisition by Parliament into the minute direction of ministries of state has resulted in an over cautious playing for safety on their part, besides a cluttering up of parliamentary time. Finally, excessively democratic institutions tend to breed an excessive profusion of directing committees. For these reasons we favour for health administration a statutorily appointed public corporation, subject to periodical parliamentary review, with its governors appointed by directly elected ministers of the Crown.

70. In internal structure, any large organisation is subject to a series of mutually opposed forces, on the nice balance of which its efficiency depends. These are:—

(i) The technician *v.* the administrator.
(ii) Parallelism *v.* hierarchy.
(iii) The individual *v.* the committee.
(iv) The centre *v.* the periphery.
(v) Uniformity *v.* diversity.

final report may submit a minority report or may merely decline to sign the final document Examples of such committees are the various Royal and parliamentary commissions, and the Medical Research Council and its various subcommittees

86 Having considered committees, we come now to the individual in the organisation Here again, the position of the technician and the administrator differ slightly, thus the technician may stand alone, while the administrator has got to fit himself into an ordered pattern if administration is to go on at all But for both there are certain restrictions, conditions and safeguards which have to be seen clearly —

(i) Method of appointment
(ii) Method of remuneration
(iii) Conditions of tenure
(iv) Principles of advancement
(v) Possibilities of change

87 We think that *all* appointments above the most junior level should be advertised publicly, however strong an internal candidate may be Appointments should be made by boards rather than individuals Examinational entrance has little to commend it, though exam results may be an important factor for an appointing board

88 A strictly logical scale of remuneration is impossible to devise In a community where there are attractive jobs for all it may be necessary to raise the salaries of less attractive jobs above the general level But in the long interim period before such a Utopia exists, we suggest a steady drawing together of maximum and minimum salaries with parallelism on each level Thus where there are a number of heads of departments they should be equal in salary and status If there is one executive head of a group of directors (e g , a director-general) he should be *primus inter pares* , his salary should not differ from his colleagues and the reward for his additional responsibility should be his additional authority The ranges on both administrative and technical sides should be the same

89 Security of tenure is a difficult question There is no known post which is completely secure though there are many from which dismissal only follows discovered dishonesty and not laziness or inefficiency It is argued that security both attracts and produces people lacking in enterprise and initiative Equally, its absence makes for intrigues designed to displace unpopular seniors There are two other peculiar by-products of security , one bad senior appointment may stultify a whole organisation for years , to cure this the strange practice of dismissal by promotion may occur a man is got rid of from one section by recommending him strongly for a higher appointment in another In medicine security of tenure has been the rule rather than the exception The medical officer of health is statutorily secure to enable him to stand up to the wayward local authority In parallel organisations such as the voluntary hospitals, security does not as a rule lead to a decline in initiative, at the same time, appointments are made with the greatest care, and initiative and character are usually regarded as important factors On the whole we favour security for the technician and security with limited tenure for the administrator At the end of an administrator s tenure, transfer rather than reappointment should be the rule and retirement or dismissal should not be so rare that it carries with it disgrace

90 Principles of advancement follow automatically from the method of appointment If all but the most junior posts are advertised and if appointments are made by boards, promotion by seniority should be confined to those cases where seniority is combined with merit

91 Possibilities of change are limited for everyone A man may give hostages to fortune in the shape of a house or a family which tie him just as much as a formal contract There is however one form of tie which can easily be remedied—the fixed superannuation scheme Inside an organisation, all superannuation schemes should be mobile and anyone leaving an organisation should be able either to take his scheme with him or to receive an adequate lump sum benefit Broadly speaking, we think that internal staff movements among both technical and administrative staff should be encouraged Administrative staff should move both in the geographical and in the organisational planes In five years a good man will have mastered any administrative or executive job If he has not done so in that time he never will We therefore recommend fairly regular transfers from one job to another and from one part of the country to another Such transfers should not be inevitable but should be encouraged

92 To speak dogmatically about the optimum age of administrators is difficult as one man may be old at 40 and another young at 60 But, as a general rule, posts calling for initiative and enterprise no matter how senior, should be held by younger men , those requiring wisdom and critical faculties, such for example as personnel selection and arbitration by older men It is particularly important that the tenure of office of the young senior should be limited

93 An administrative problem of great importance is dual control This situation arises when two authorities jointly administer one machine It is successful only when the interests of the two authorities are entirely mutual (e g , where two small counties combine to own a joint mental hospital) But this is seldom so As a general organisational rule dual control is a compromise to be avoided On occasion a pseudo-dual control giving the feeling of satisfaction to one authority, and the actual power to another may work extremely well

94 Every large organisation has a nerve centre and a number of peripheral units The size and number of such units should be determined by their function To allow units of historical interest only to override functional need is certain to lead to inefficiency In each peripheral unit, the principle of parallelism should be applied Its administrative head should be equal in salary and status with the headquarters officer exercising general control Peripheral officers in charge of large sections under the peripheral administrative head should have similar salaries and status Interchange of staff between headquarters and the periphery and between parts of the periphery should be continuous and should carry with it no stigma Thus freshness is ensured, and the evils of bad appointments are minimised Visiting between the periphery and headquarters should be encouraged Peripheral devolution of authority, particularly a large degree of financial authority is essential if work is to be done smoothly and quickly and there should be room for peripheral experimentation Thus the pattern of each peripheral unit should not automatically be uniform Much may be learned from a study of the regional organisation of war-time ministries, both as to precepts to follow and mistakes to avoid

95 Every large organisation is continuously in touch with the public Its smooth working depends in part on the greasing of these points of contact Greasers are known as public relations officers A public relations officer must make sure that members of the public know the services which are being offered to them that their just criticisms are met, that their unjust ones are explained, and that courtesy and consideration are continuously in the minds of all within the organisation who make contact with the public A joint training in sociology and advertising is a good background for a public relations officer, but ultimately personality is the most important factor in public relations work

78. We have, then, no hesitation in recommending that in a national medical service, parallelism should be the dominant feature of the technical side, whether this be general practice, hospital practice, laboratory work, teaching, or research. In environmental medicine and in pure administration, a greater degree of hierarchy is probably inevitable, but even here it should be kept to a minimum.

79. Turning now to the question of the rôle of the individual and the committee, it is well to consider first the limitations of committees, and then their varieties and functions. It has often been noticed that the decisions of committees are far worse than those of the individuals who compose them. This is not really surprising, for the evidence before a committee is seldom clearly and logically set out, the members have little time for reflection and consideration, and what they say is often a superficial judgment or a comment on an individual point only. Good committee members are rare; it should follow that committees called upon to make decisions should be equally rare. On the other hand, committees make excellent sounding boards for new proposals.

The following types of committee commonly occur:—

(i) Legislative
(ii) Directing
(iii) Executive or administrating
(iv) Coordinating
(v) Advisory
(vi) Judicial
(vii) Research or investigating

In practice, committees often perform more than one of these functions.

80. *Legislative and directing committees* may be considered together, since by our definition, a directing committee is one legislating within a field defined by the national legislative body. We support the view that legislative and directing committees should ultimately be responsible to those for whom they legislate. But, except in the case of the national legislature, we oppose a day-to-day inquisition, both because this stultifies enterprise, wisdom and long-sighted planning, and because many decisions must be based on highly technical evidence. In Britain, a 5-yearly mandate for such committees has been found to be a good working rule. At the end of that time, it is wise to call them to account. In addition, they may issue annual reports of their activities, which, along with their other activities, are constantly commented on by public opinion. Since directing committees are mainly concerned with technicalities, their members are best appointed not by public election, but by private selection—by, say, a minister of state and the privy council. To avoid restriction of the field, vacancies on such directing committees or boards should be publicly advertised. It is essential that some members (and perhaps the chairman) of such a committee should be non-technicians, eminent laymen who are capable of safeguarding public interest against technical interest. To prevent staleness, a limit on reappointment must be placed, and to ensure continuity, retirement must be by rota. The powers of a directing committee must be defined by the national legislature.

81. *An executive or administrative committee* carries out the policy decisions as instructed. In practice, such a committee can only consist of individuals personally responsible for the branches of an administrative machine; if the members are not themselves administrators, they will often be unable to ensure that the administration is in fact carried out. An administrative committee cannot be the head of an administrative machine. This head must be a single individual, hereinafter called the director-general. He must be appointed by, and be capable of being dismissed by, the directing committee or governing board. For him to be fully informed, he must attend the board's meetings as its secretary. In implementing the board's policy, he will need to discuss with and instruct his own senior officials. It is for him to decide whether this is best done individually, or in committee. Such a committee is not one at which votes are taken, since, if he wishes, the director-general can over-rule all its members. The task of schooling administrative committees is one calling for great patience, tact, and firmness.

82. *A coordinating committee* may not differ greatly from an executive or administrative committee. It is a gathering of equals who are aiming to fit together their varying tasks. However, unlike an executive committee, coercion of the members is impossible, and success depends on the tact and perseverance of the chairman. Coordinating committees have special interest in medical organisation because existing regional hospital committees are of this type. Coordination only presents big difficulties when the common good demands that some of the coordinators shall surrender a part or the whole of their work. In a perfect world, a coordinating committee would be enough; but since even hospital administrators are human, some overriding power must strengthen the work of a coordinating committee. The best overriding power is the control of the purse strings.

83. *Advisory committees*, properly used, are of enormous value. They should not be elected, but coöpted with great care. Some members may be chosen as public figure-heads, but the majority should be there because their advice is really valued. The wise administrator, when faced with an awkward decision, will take the opinion of his advisory committee. Not only will its advice be inherently valuable, but it will provide a private and public bulwark if the decision is questioned. The BBC has used advisory committees with particular wisdom. A special variety of the advisory committee is what may be called the public relations committee. This may be chosen on a geographical or a functional basis. Its task is to reflect the feelings of the public it is chosen to represent, to pass back to its public the decisions of its parent body, and to obtain explanations of public misapprehensions or misunderstandings. Local examples of such committees are being increasingly used by national organisations, and are proving of great value. It must be emphasised that such committees need careful training if they are to be prevented from trying to take on directive or executive functions, and this training takes time and patience.

84. *Judicial committees* apply general rules to particular cases to settle disputes. Where no general rules are accepted by the disputants, judgment had to be based on practical consideration of all the facts presented; on such occasions, a utilitarian yardstick is invaluable. In the application of well-defined rules, legal training and experience is desirable in most members of the committee. In general arbitration, a legal chairman is a great help, but the committee should include members who may be regarded as equals of the disputants—e.g., in a dispute between a trades union and a group of employers, the arbitration committee should include representatives of both unions and employers.

85. *Research or investigating committees* have two methods of study open to them. They may invite or order the submission of evidence, written or spoken, and may cross-examine witnesses, and they may arrange for the carrying out of research; this may be done by individual members of the committee or by commissioned investigators. In practice, the success or failure of a research committee depends almost entirely on the intelligence and personality of its chairman and secretary. For any big undertaking, the secretary should be whole-time. To the chairman and secretary will usually fall most of the drafting of the committee's report. The draft report will then be circulated to all members for criticism and correction. Members disagreeing with the

counties). The senior regional officer should be the regional director, though in Scotland and Wales he might well be a controller. As a general rule, he should be a medical practitioner. The regional office would be the main channel through which the national health funds flowed to hospitals, health centres, and practitioners. Each regional director should be assisted by a general regional advisory committee, and a number of regional technical committees, one of which should be the regional medical advisory committee. The general regional advisory committee should include representatives of the local authorities, the local university or universities, the medical and nursing professions, and possibly local trades-unions and industries. Similar organisation on a subregional or county level is also desirable.

106. The main regional coördinating committee should be the Regional Hospital Committee, composed of representatives of all hospital owning bodies or authorities. The chairman of this committee should be the regional director. It would be the duty of the National Health Corporation to ascertain the medical needs of the population throughout each region, to make sure that these needs are met, and that the conditions of all those working in the health services fulfil the authorised standards. In carrying out this work, it will be necessary to give directions to hospitals on the subjects of size, function and staffing. The regional hospital committee will be the place at which the problems of coördination are thrashed out. Financial control will be the first force by which the corporation's directions are made operative. The corporation should also have the power to acquire compulsorily recalcitrant and inefficient hospitals. The corporation should not be squeamish in exercising these powers if necessary; efficiency should be regarded as more important than autonomy.

107. If elected Regional Councils, analogous to county and county borough councils, are established by law, they should be closely linked with, but should not control, the regional organisation of the National Health Corporation. The regional director might be their health advisory officer. They should nominate representatives on the regional advisory council, and they might be hospital-owning authorities.

108. While it is in theory desirable that all hospitals and other health buildings should ultimately be the property of the National Health Corporation, we recognise the need for a compromise. Provided that the staff of the hospitals were members of the corporation, the actual ownership of the fabric need not change. The present owning bodies could continue to appoint the hospital committees or governing boards, though the functions of these committees would approximate much more closely to those of a voluntary hospital board of governors than to a municipal hospital committee. Medical staff committees in hospitals would be the rule.

109. To strengthen the links between the local public in each small area and their health services, we propose that local health committees should be set up. These should be responsible for reflecting local sentiment about all health problems to the corporation, and for organising the supply of local health information to the community. Representatives of local practitioners should attend these committees to keep them informed of local progress and difficulties. Some members should represent the different parties on the local authority; others should be coöpted to represent other local interests, especially the local workers; a definite proportion of the members should be women.

110. Both the National Health Corporation and the Social Security Board should be linked to the Ministry of Health in much the same way that the BBC was formerly linked to the Post Office. Since the income of both would be derived first from the Social Security contributions received by the board, and secondly from a Treasury block grant, the Ministry of Health might nominally hold the pool into which both these were paid, and from which block grants were made to the corporation and the board. The expenditure of both would not, however, be under the supervision of the Ministry and the Treasury, but under their respective boards of governors. The Minister would answer in the House for the broadest lines of policy only, and not for any details of day-to day or year to year business.

PART IV

The Doctor and His Work

XIII. An Outline of the Medical Services

111. Broadly speaking, doctors who serve the community, fall into three groups:—

(i) The home doctor—family doctor, or general practitioner.
(ii) The specialist or consultant.
(iii) The social doctor—environmental doctor, or medical officer of health.

The first two are concerned with the individual patient, and are primarily clinicians. The third is—or should be—concerned with patients en masse. Doctors perform other important functions, in particular:—

(i) Teaching: technical for medical students, student nurses, and other technicians; and (to a small extent) popular, for members of the public.
(ii) Research.
(iii) Administration.

But each of these functions is carried out by doctors who continue to be, or have been, members of the three primary groups.

112. There are a few people who believe that the day of the general practitioner, hereinafter called the Home Doctor, is over, and that patients should be dealt with from the outset by specialists. This proposal is only logical if it envisages a new type of specialist—the preliminary diagnostician or sorter. It envisages also a battery of specialists geographically situated so that they can see every sick persons. From this, it follows that routine domiciliary medical attention must end, and with it the intimate knowledge of the home circumstances of every patient which is a priceless asset of the good home doctor. While we admit that there is room for improvement in the diagnostic training and skill of the home doctor, we consider that these proposals are grossly wasteful and are not in the best interests of the public. We think that the personal relationship between the home doctor and the patient is as real and important as it is hackneyed. We therefore accept the principle of the three types of doctor enumerated above, though we are by no means satisfied that the services they offer to the public are all that they should be. In particular, we would point out that special training or experience is provided for specialists and medical officers of health (hereinafter called social doctors) while none is provided for or demanded of the home doctor.

XIV. The Home Doctor

THE PATIENT'S POINT OF VIEW

113. From the patient's point of view, the home doctor has the following functions to perform:—

(i) He must be the doctor of the patient's choice.
(ii) He must examine and advise the patient at a point reasonably near the patient's home at a mutually convenient time, whenever the patient wishes it. The conditions of examination must be such that the patient is satisfied that all that can be done, has been done. Time for examination and explanation must be adequate.

XII Administration of a National Health Service

96 If the public throughout the country is to receive the best possible medical attention and treatment, regardless of individual or local poverty, a nationally organised health service is essential. The health service we have in mind is that concerned with the personal needs of the individual; environment services, which are primarily the concern of non-medical technicians, should be under separate control. Bearing in mind the general principles of administration already considered, we make the following proposals.

97 We are firmly of the opinion that the central authority of the national health service should be a corporate body and not a department of state directly under a minister of the Crown. Our reasons for this view are:—

(i) In departments of state, hierarchical organisation is the rule. In corporate bodies, a high degree of parallelism is possible.

(ii) Policy in medical matters must be long-term. To submit it to day-to-day or even year-to-year inquisitions in Parliament is to discourage bold planning and initiative and to invite playing for safety.

(iii) The principle that the best possible health services should be made available to all is no longer a political issue.

(iv) The maintenance of health is a joint task for the technician and the layman. To place the technician under the layman (as in a Government department) or the layman under the technician (as in martial law) is not to get the best out of either. They must in fact work together and equally.

98 The powers of the corporate body, hereinafter called the National Health Corporation, should be vested in a board of governors, in numbers not more than 7—a lay chairman, 3 medical members and 3 lay—at least one of whom to be a woman. We consider that any greater medical loading of the board might lead to accusations of self-interest in medical administration. The initial members should serve for from 3 to 7 years and thereafter members should serve for 5 years. Reappointment should never occur more than once. The board should be appointed by the Privy Council, on the advice of the Prime Minister and the Minister of Health. Members of the board should receive salaries, but it should not be their exclusive occupation. Vacancies on the board should be publicly advertised (as should every post in the corporation), but the choice should not be limited to the applicants. The work of the corporation should be subject to 5-yearly scrutiny, and its charter to 10-yearly renewal by Parliament.

99 The corporation should be charged with the spending of the national health funds, apart from purely monetary relief of the sick and their dependants. The funds would take the form of a block grant from the Social Security Fund, itself derived from the social security insurance payments and an exchequer contribution (see ¶ 43–46). The corporation should be empowered to acquire, own, and build hospitals of all types, clinics, health centres, offices, and other property. It should automatically acquire hospitals owned by the Ministry of Pensions and the EMS buildings, but not voluntary or municipal hospitals.

100 The principal executive officer of the board should be the Director General. Except in very exceptional circumstances, he should be a medical practitioner, and he should be *ex officio* secretary of the board. He should have a deputy. The senior officers in charge of large sections of the corporation's work should be Controllers. The salary ranges of the director-general and the controllers should be the same. Below each controller should be the directors of divisions, including peripheral directors in charge of geographical rather than functional divisions. These directors and their deputies should be on the same salary ranges.

101 Advisory committees should play a prominent part. All should meet regularly. Their members should mainly be coöpted by the board, and should sit for 5 years, being eligible for reappointment for another 5 years. They should receive honoraria. Senior officials of the corporation should attend the meetings. There should be a general advisory council, composed of men and women eminent in public life, medicine, nursing, the ancillary health services, the sciences, and even the arts. Technical advisory committees should cover the various aspects of the work of the corporation, and on these some members might well be appointed by the Royal Colleges, the British Medical Association, the General Medical Council, the Universities, the various nursing bodies, Government departments, the trades unions and organised industry. The corporation should make no attempt to take over the work of the British Medical Association or the General Medical Council.

102 The position of Scotland and Wales demand special consideration. If the burden of social security is to be uniformly distributed, they must be included in the national collection and distribution of money on the same basis as the rest of Britain. It would, however, be possible to organise separate health services for both. The advantages of this would be the satisfaction of national pride, and the possibility of a freer experimentation. The disadvantages would, in our opinion, outweigh these advantages. Interchange of personnel should play a large part in a national health service. If the Tweed and the Marches are to be barriers in this interchange, all sides will be losers. We therefore favour a national health corporation which cover Scotland and Wales. Both should however be treated as special units, with their own controllers and geographical advisory committees having the status of councils.

103 We are satisfied that the units of local administration in Britain are at present too small for efficiency. The new areas, hereinafter known as regions, should coincide as far as possible with the national regions adopted for civil administration. A multiplicity of functional regions, as at present, makes for inefficiency whenever functions overlap. Such regions may not always be ideal for health purposes, but the losses as a result of faulty geography are likely to be less than those resulting from a multiplicity of borders. Assuming that the present civil defence regions are adopted the following general modifications appear necessary:—

Region 1 (Northern), Region 3 (North Midland), Region 4 (Eastern), Region 6 (Southern), Region 8 (Wales), and Region 10 (North Western) each need dividing into 2 subregions. North Wales may need to be linked functionally with Cheshire and South Lancashire. Region 5 (London) could conveniently be enlarged. Region 7 (South Western) needs dividing into 3 subregions. Region 11 (Scotland) is already divided into 4 subregions and may require further subdivision.

104 If the regions are to be entities in the life of the people, it will be necessary to get rid of the present cumbersome geographical nomenclature. As a tentative suggestion, we offer the following names:—

Region	1	Tyneland	Region	7	Westland
,,	2	The Ridings	,,	8	Wales
,,	3	The Shires	,,	9	The Midlands
,,	4	Anglia or Fenland	,,	10	Lancastria
,,	5	London	,,	11	Scotland
,,	6	Wessex	,,	12	The Weald or Eastland

At this point, it should be clearly stated that the regions proposed are administrative and not medical; a patient choosing a doctor, or even a hospital, "over the border" should be free to do so.

105 In each region, the corporation should have an administrative office, with smaller offices in the subregions, or alternatively in each county area (county boroughs to be treated for this purpose as parts of

(v) By arrangement with his colleagues, he must have regular and adequate off-duty times. He must have regular holidays.

(vi) Once every 5 years at least he must have a refresher course specially planned for his needs.

(vii) Within his general field he must have opportunities for acquiring and utilising special skills.

(viii) He must keep in contact with his colleagues, general and specialist, and for this there must be a physical focus. His primary focus will, in fact, be the health centre; his specialist focus will be his local polyclinic and hospital.

(ix) He must be adequately insured against sickness and provided for in old age.

A consideration of these points will make clear our proposals for the home doctor service.

123. We propose that all practices which are about to fall vacant, or have fallen vacant by sudden death, should be compulsorily advertised in the medical journals. Such advertisements should have a set form giving the essential data. The appointment should be made by a small board, on which should sit representatives of the regional office of the National Health Service and of the regional medical advisory committee; one member of the staff of the medical committee of the health centre concerned, preferably the retiring or vacating doctor, should also sit on the board. The patients on the list of the retiring or deceased doctor should be invited to choose a new doctor from among all those working at the centre, including the newly appointed practitioner; they would be asked to make a definite choice, and would, of course, be free to change their choice later if they wished.

124. In newly developing areas, where more home doctors or health centres are needed, a board similar to that for a death vacancy should make the appointment from among the candidates applying. Such need will be indicated to the regional office of the National Health Corporation by its medical intelligence service, the peripheral officers of which will be the medical officers of health. The determination of need involves a detailed knowledge of each locality, and a periodical local census. This could be made from the social security registrations.

125. Each doctor at a health centre would accept patients for his list up to a prescribed maximum number. He would be free to refuse to accept patients, but having accepted them, he would be under an obligation to treat them in their homes and at the health centre, and to arrange for consultations and hospital treatment for them whenever necessary. His remuneration would consist of three parts:—

(i) A basic salary with additions for special qualifications and length of service.

(ii) A capitation fee depending on the number of persons on his list.

(iii) Fee for special clinics or other special work, and private fees for patients choosing to be outside the service.

The terms and conditions of service should be on a national basis, and should not be altered without consultation with the organised medical profession. The salary, capitation, and special fees should be paid from the corporation funds. Deductions should be made for pensions, dependants' pensions and sickness and disablement allowances. In the event of a practitioner leaving the service, his contributions should automatically revert to him. Contributions and benefits should be unaffected by change of occupation within the service.

126. Practitioners entering the service from existing private practice should be offered guaranteed non-contributory retirement and death pensions in compensation for loss of capital. The sale of practices within the service would not be permitted.

127. We come now to the actual organisation of the health centre. To limit the amount of travel of patients, centres should not be too large (6–12 doctors). The centre should be purchased or built, and owned and maintained by the National Health Corporation. The building should be pleasing and utilitarian within and without. Each doctor should have his own consulting-room and there should be an additional consulting-room for visiting specialists. We regard it as important that doctors should not share rooms on a Box and Cox arrangement, as each room should develop its occupant's personality. There should be several common waiting-rooms not used for any individual doctor. All patients, on arrival, and on departure, should pass through a receptionist's office, for record purposes, the issue of patient's notes by the receptionist to the doctor (not the patient), and the booking or collection of private fees. There should be a small theatre for minor surgery, a small surgery for septic work, a pathological room for simple diagnostic investigations, a small X-ray room and possibly a room for physiotherapy. There should be a dispensary in charge of a pharmacist who should also act as supply officer for instruments, stationery, and equipment. Dispensing on the spot would save an enormous amount of the public's time and the dispenser would be in a position to check excessive prescribing at source. In addition, there should be rooms for the local district nurses, midwives, and health visitors. There should be a resident caretaker who would also act as telephonist. At least 2 secretaries would probably be needed for a centre with 8 or more doctors; they would undertake clerical work and record keeping.

128. In no circumstances should any inpatient work be undertaken at the centre.

129. Within the centre, the whole medical staff sitting as a committee would arrange the hours of work, emergency rotas and night calls, holidays, and other internal matters.

130. It would be the duty of the centre to provide antenatal, natal, postnatal, and infant and child welfare services. It would also provide staff for school medical inspections. If one or more practitioners specialised in midwifery and infant and child welfare, taking over cases from their colleagues, they should receive extra remuneration but the length of their permitted list should be reduced.

131. The centre, especially the pathological and X-ray sections, should be closely linked with one local hospital, and the work done in these two sections should be supervised by the appropriate hospital specialists. Doctors at the centre should be attached officially to the local hospital.

132. At the centre there should be one or two whole-time salaried assistants, junior practitioners gaining experience in home practice. They should be assistants to the centre and not to individual doctors and the committee of the centre should decide their work. They should help and deputise for the seniors, who in turn should instruct them as much as possible. Assistantship would be a sine qua non for a doctor applying for a senior post at any health centre. Normally an assistant would hold the post for from 6 to 12 months.

133. The centre should encourage an emphasis on health rather than sickness in the community it serves. It would have an important part to play in health education, by lecture and by individual instruction. Individual centres should experiment with periodic health examinations to ascertain their value and dangers, if any. Prophylactic services, such as vaccination and immunisation, should be undertaken at the centres as a regular part of the service.

134. There is much to be said for incorporating two or more dentists in each health centre.

135. In rural areas, the doctor's surgery should become a one-man centre. Adjacent country practitioners

When the patient is more severely ill, the home doctor must visit the patient's home

(iii) He must give the same standards of advice and skill to all his patients, regardless of their class, social status, or income The standards must be the highest he can achieve

(iv) When he has reached the limit of his skill, he must not conceal the fact from himself or the patient He must then arrange for the patient to see an appropriately skilled specialist, and must cooperate with this specialist in carrying out treatment when the patient leaves the specialist's hands Furthermore he must arrange for a specialist opinion at the patient's request, even when he himself considers this unnecessary

(v) When it is necessary, he must arrange for the patient to receive appropriate institutional treatment

114 Each of these functions requires further examination The value of freedom of choice of doctor, even though it is in part illusory, has already been discussed (¶ 36) That the "point of examination" must be reasonably near the patient's home is self-evident In urban areas, such points may conveniently be Health Centres, at which a number of practitioners work, in rural areas, such grouping is impossible, and the practitioner's surgery and consulting room must act as the health centre The advantages to the patient at such a centre are that the necessary devices for special examination will be at the doctor's hand, that dispensing if done will probably be more rapid, and that the presence of several doctors at one spot is likely to raise the standards of work of each

115. That all patients shall receive only the best is another self evident proposition Perhaps, naturally, many panel patients believe that home doctors favour their private patients Though the belief is more widespread than the facts justify, it has some basis Doctors are subject to the same weaknesses as other men, and social barriers are not unknown in medical homes, the poor waiting on benches and the rich in the dining-room is not yet a thing of the past We consider that the health centre will go a long way to removing these ideas Private patients may elect to see their doctor in his own home or at the health centre As they come to appreciate the value of the services which the centre offers, they will more and more tend to use it Waiting-rooms at the centre should be arranged according to the doctors to be visited, and not on a social basis The standard of waiting-room furniture should be as high as possible and the same for all There should be an appointment system available for all Private patients attending without appointment should not receive preferential treatment over insured patients attending thus

116 A third self-evident proposition is that the skill of the home doctor is limited At present, many home doctors do work which in large towns is entirely in the hands of specialists While we recognise that some home doctors are competent surgeons, radiologists and pathologists, we consider that even the best of them are less valuable to their patients than reasonably good specialists This is no reflection on their efforts, since in these specialties constant practice is essential if the best results possible are to be obtained, and home doctors are inevitably denied such constant practice The proper place for the home doctor surgeon, if he is competent, is in the ranks of the specialist We have cited the best The average is far below this, and at worst, the home doctor operating in a small hospital staffed only by other home doctors may be a serious menace to the neighbourhood This menace is the greater because the public have no standards by which to judge his surgical skill

117 We realise that any proposals to limit the surgical and specialist activities of the home doctor will meet with some opposition Since, however, our primary concern is the welfare of the public, we must state categorically that for specialist work, specialists must be used Lest we are thought to be discriminating against the home doctor, we would add that the remuneration of the home doctor should not differ materially from that of the specialist

118 In his own field, the home doctor must in fact be a specialist An outline of that field should convince all reasonable people that he has enough on his plate without recourse to other specialties He must be an expert in —

(i) General bedside diagnosis, especially medical and surgical emergencies

(ii) General home treatment (including, in remote areas, dispensing, but excluding biochemical medicine such as the stabilisation of diabetes, and specialised treatment such as venereal disease)

(iii) Simple clinical pathology

(iv) The diagnosis and home treatment of specific fevers, skin diseases, diseases of the eyes, ears, nose and throat, children's diseases, gynæcological diseases, and minor psychiatric illnesses

(v) After-treatment of all institutionally treated illness

(vi) Child welfare

(vii) Ante- and post-natal care, and possibly midwifery

(viii) Minor surgery and medical first-aid in surgical emergency (excluding anything but the first-aid treatment of fractures)

(ix) Forensic medicine as it affects general practice

119 In addition, he has to be a guide, philosopher, and friend to his patients and their families, and a combination of home health educator (ready with advice on ventilation, diet, exercise, rest and sleep) and health public relations officer and almoner (making sure that those who need and are entitled to help know where and how to get it)

120 This formidable list brings home again the point *that the training of the home doctor* should be very different from what it is At present, he wastes many hours in the dissecting-room and the operating theatre which should be spent in the fever hospital, the children's ward, the special outpatient department, the social welfare department, and above all, in the health centre itself

121 But if we consider that the home doctor must be a specialist in home doctoring and not an operative surgeon, it does not follow that he should play no part in institutional treatment Whenever physically possible he should have facilities, not only for following his patients through the hospital, but for playing an active part in hospital work The details of our proposals will be considered later (¶ 128)

THE DOCTOR'S POINT OF VIEW

122 The doctor's point of view is, in fact, complementary to the patient's Unless the home doctor is working under the best conditions, he will not be able to give his patients the best service The conditions we consider essential are as follows —

(i) He must not have to "buy his way in" to a practice His early years in practice must not be crippled by the heavy debt which purchase so often involves

(ii) He must be a free man—free to throw up his practice if he wishes so to do, free to refuse to accept a patient (though having once accepted, he must carry *out his obligations), free to increase* his practice by his own efforts up to a point where it is generally judged that efficiency is reduced, and free from undue bureaucratic interference, whether medical or lay If he fails to carry out his statutory obligations, he must be subject to statutory discipline, and not the inroads of officialdom Unless our doctors are free men, they will lack the sense of responsibility on which the doctor-patient relationship rests

(iii) His remuneration must be adequate, from the outset of his career, and must bear a relation to the amount of work he does

(iv) He must be adequately housed, and adequately equipped for his work via a regional hospital committee. These functions would be:—

(i) The provision of a complete outpatient department or polyclinic for:—

(a) Specialist advice for patients sent by home doctors from health centres.

(b) Outpatient treatment of special diseases and conditions beyond the scope of the home doctor and the health centre—e.g., tuberculosis, venereal disease, fractures, diabetes.

The polyclinic would in fact resemble the outpatient department of a large voluntary hospital, plus a tuberculosis dispensary, and a venereal clinic, but without a casualty department or a department for treating the minor sick as outpatients. It would be staffed on a sessional basis by specialists coming out from the key hospital; these specialists would also supply a domiciliary and health centre consultant service in case of real need. Special small consulting-rooms would exist for patients wishing to see specialists individually. Such private treatment would be supplied either to those who paid an additional insurance charge or to private uninsured patients; in the former case, they would be seen by whole-time salaried consultants; in the latter, by the part-time staff as fee-paying patients; all such fees should, however, be collected by the almoner.

Posts as assistants in the outpatient clinic should be available to home doctors working at health centres. All doctors from attached health centres should have the right to attend at all non-private outpatient sessions.

(ii) The provision of beds (private and public, arranged on the same basis as for outpatients) for:—

(a) Acute medical and surgical emergencies for adults and children. These beds should be in the immediate charge of an RMO and an RSO; these posts should be occupied only by doctors having higher qualifications and should be equivalent to or immediately above registrar status. The RMO and RSO should work under a rota of key hospital consultants, always on call. Emergency surgery should be done by the RSO or a key hospital consultant; anæsthetics should be given by the RMO, another resident, a resident anæsthetist or the home doctor.

(b) Minor illnesses for which home nursing cannot be arranged. Such cases should be seen on admission by the RMO or RSO. If he is satisfied, they should remain under the charge of the admitting home doctor. If the need arose the RMO or RSO should have the power to call in a key hospital consultant, though not without informing the home doctor except in case of emergency.

(c) Midwifery.—Depending on the size of the department the admission and general supervision should be undertaken by the RSO or a resident accoucheur. Home doctors should, if they wish, handle their own cases, but a key hospital consultant should always be on call.

(d) Acute infectious fevers, including smallpox. We are satisfied that there is no medical need or justification for separating fever hospitals from other hospitals. We consider that geographical isolation has had a bad effect on both fever and nursing personnel, and that the patients have been the ultimate sufferers. Fever beds should be in the immediate care of the RMO or a resident fever officer, who should work under a key hospital fever consultant.

(e) The chronic sick, the infirm and the slowly dying. We consider it essential that these patients should be nursed reasonably near their homes, and that they should *not* be cared for in isolated institutions to which they feel they are sent to die, and in which they often sit and rot. They should be looked after on the same basis as the minor sick.

(iii) The provision of a pathological laboratory and radiological department. The former should be in the immediate charge of the RMO or a resident pathologist, working under a key hospital pathologist. The latter should be under a visiting key hospital radiologist, with RSO or a technician trained for emergencies.

(iv) The provision of the department of the medical officer of health, hereinafter called the social physician. He should be responsible for all health and sickness records in the hospital, the attached health centres, and the area served, as well as a number of other duties which will be discussed later.

(v) The provision of a hostel, attached but not necessarily immediately adjacent, for the children under 15 of local women admitted as patients to the medical centre or the key hospital. We consider this a vital health service, inasmuch as the care of children exercises a powerful inhibiting factor on women who need but refuse hospital treatment. We think that children over 14, and husbands, should be quite capable of fending for themselves. Children of sick mothers being nursed at home should also be eligible for admission. As far as possible, they should continue to attend their own schools during the day, but if necessary should attend local schools nearer at hand.

143. The medical centre would thus become an outpatient diagnostic and treatment centre, and an emergency treatment centre (including under this heading fevers and midwifery), a hospital for the minor sick, and a home for the chronic sick. The home doctor would enter far more into its work than he does as a rule at present, but no patient would be isolated from the best available skill.

144. The medical administration should be in the hands of the RMO and the RSO who should be appointed on the advice of the key hospital medical committee, to whom the work of appropriate junior staff would be well known. The lay administration should be in the hands of a lay administrator, a secretary, steward, or administrative officer, paid like the rest of the staff, by the National Health Corporation. The lay hospital committee, whether voluntary or local authority, should meet monthly, or better, quarterly to receive the reports of the secretary, RMO and RSO, and to deal with such matters as was necessary. A medical committee, composed of the visiting key hospital specialists, plus some home doctors representing local health centres, and the local medical officer of health should advise both the lay committee and the regional authority.

145. *Key hospitals* would be existing large voluntary or municipal hospitals, or new hospitals. At least one in each region should be directly linked with a university as a main teaching centre, and some undergraduate or postgraduate clinical teaching should be carried out in all key hospitals. There would be no inherent objection to having two or more key hospitals in any large centre of population, provided the rest of the region were adequately served.

146. At each key hospital there should be a complete functional replica of the medical centre, first to provide the necessary services for the population and health centres in the immediate neighbourhood and secondly to provide the teaching facilities needed in outpatient and minor medicine, fevers, midwifery, and the care of the chronic sick. The student should, however, gain his necessary casualty experience as a dresser attached to an adjacent health centre.

147. Inpatients would be received exclusively from medical centres (including the key hospital's own section) on the advice of the key hospital's own staff who had seen them as outpatients. Patients desiring privacy, whether paying extra insurance or private fees, should, as far as accommodation permits, be treated privately. The only privilege privacy would carry with it should be freedom from being taught on and demonstrated. In all other respects,—nursing, theatre, medical attention, food, &c.—conditions should be identical.

148. The type of case entering as an inpatient would include all cold surgery, semi-acute, and chronic medical cases of all types requiring investigation and treatment, and all types of case admitted as a result of local hospital functions.

149. In internal organisation, the key hospital should resemble closely the voluntary hospital. A series of parallel and equal medical, surgical, and other firms or units would operate. Typically, each might consist of a should be affiliated to the larger centres in their local country towns, so that they have the benefit of assistance and the services offered by the centre In rural areas normally covered by country town practitioners, outlying surgeries might form a part of the centre All doctors doing rural practice should have cars convertible into one bed ambulances (by lowering the back of the seat next the driver)

136 Certain types of case should invariably be referred from the centre to the specialised clinic attached to the local hospital These include tuberculosis, venereal disease, mental deficiency, orthopædics including all fractures, and unstabilised diabetes

137 We consider that the only serious risk of the health centre system is that it may lead to bickering and quarrelling among the home doctors working there Nevertheless, the advantages, both to patients and staff, which it offers, greatly outweigh this risk The fact that there will be a similarity, if not an equality, of remuneration, and that remuneration will be related to work done, will greatly help matters, and as more of the higher income patients elect to enter insurance practice, the volume of extramural private work will become very small With a certain amount of goodwill we see no reason why the rivalry inside the health centre should not be confined to healthy and stimulating competition

XV Specialist and Hospital Services

THE HOSPITALS

138. An adequate hospital and specialist service must provide the following facilities —

(i) Consultation in clinics reasonably near the patients' homes, and, when necessary, consultation in the patients' own home

(ii) Outpatient treatment for conditions beyond the scope of the home doctor

(iii) Inpatient investigation and treatment

(iv) Special treatment for long lasting and chronic illness

(v) Rehabilitation (positive convalescence)

(vi) Training of doctors, nurses, and ancillary health workers

(vii) Research

139 An exhaustive examination of the disadvantages of the present system would be redundant, since most of them are generally admitted, but the following brief summary is necessary if remedies are to be applied —

(i) There are great inequalities in the service, conditions, and facilities offered to patients At one end of the scale are the best voluntary and municipal general hospitals, at the other are certain remote provincial voluntary hospitals, cottage hospitals, nursing-homes, and municipal fever hospitals, in which one would not wish one's worst enemies to be patients

(ii) There are equally great variations in the conditions of services of doctors, nurses and other staff

(iii) There are great inequalities in the conditions of admission Voluntary hospitals in practice impose an elastic means test, while municipal hospitals impose a rigid geographical test In both, contributory payment is exacted according to capacity to pay, this payment is made during or after the patient's illness A special and peculiar admission test is applied in voluntary hospitals, particularly teaching hospitals, patients with rare, interesting, gross, or typical maladies are favoured in preference to those with common, mild or dull complaints; in non-teaching voluntary hospitals this is unjustifiable As a result, doctors in municipal hospitals are sometimes starved of interesting clinical material

(iv) There are great inequalities in the degree of privacy available for different social classes

(v) The length of time waited for admission by patients varies not only from hospital to hospital, but also from department to department within one hospital It is usually longest for gynæcological and ear, nose, and throat complaints

(vi) The consultant services available for the poor at the voluntary hospital are in many ways admirable Consultant service for the poor in their homes is conspicuous by its absence The services available to rich may be even more admirable if they choose the right consultant in the first instance, they are however in grave danger of falling into the hands of pseudo-consultants medical rogues, charlatans, and tricksters, who exploit the Harley Street neighbourhood in the absence of any publicly recognisable guarantee of consultant efficiency The middle classes can obtain the same admirable service available to the rich—but only at a price which adds financial to physical distress

(vii) The conditions of work of the genuine consultant are such that 10 lean financial years between the ages of 25 to 35 have to be survived before a reasonable income can be achieved In this period, a certain degree of disillusionment with the high ethics and scientific standards of medicine is not unusual The difficulties of the young London consultants have been considerably increased of recent years by their rapidly multiplying number

140 In planning for the future, it is reasonable to try to pick out the best points of each existing hospital service and produce something which combines them all

(i) The voluntary hospitals have demonstrated the value of the parallel as opposed to the hierarchical staffing system of the municipal hospitals A ladder of promotion which forces the able clinician away from medicine, into administration, has little to commend it It is essential that the clinician should be on a par with the administrator Further, the clinician's opportunities should not be reduced because he specialises in something other than pure medicine or pure surgery

(ii) All specialist work should be done by specialists The cottage or small provincial voluntary hospital in which the GP surgeon practises occasional surgery is a danger to the public, not lessened because the public seldom realises the risks it runs

(iii) The number of changes of doctor which any patient suffers should be minimal As far as possible, persons seen as outpatients should be under the same doctor in the wards

(iv) The number of patients in the care of any doctor should be strictly limited, whether as inpatients or as outpatients Much poor work is done because the voluntary hospital outpatient doctor and the municipal inpatient doctor has far too many patients to attend to

(v) Single quiet wards should be available to all patients who need them for medical reasons Such patients should have first pick of the single rooms available Patients with a personal preference for single rooms should have their wishes catered for by a system of additional payment graded according to income, they should not be reserved for upper income groups only

(vi) All facilities needed by an inpatient should be available under one roof Few private nursing-homes provide all these facilities, and fewer still have a resident medical staff The facilities which are available to the poor in the voluntary hospital should equally be available to the rich

141 We are now in a position to outline our proposals for a national hospital service under the National Health Corporation The unit should be the region or subregion In an undivided region, or in a subregion, there should be 3 or more *key hospitals* We anticipate that the maximum number of key hospitals in the most populous region would not be more than 10 Except in very sparsely populated areas, no point in any region should be more than 50 miles from a key hospital Attached to each key hospital, there should be a number of *local hospitals* or *medical centres* No point in any region should be more than, say, 15 miles from a medical centre Attached to each medical centre should be the local health centres

142 *Medical centres*—These would be existing provincial voluntary, cottage, or municipal hospitals, often greatly altered in function and structure, and new hospitals built by the national health corporation All costs of these hospitals should be paid by the corporation Their functions should be allocated by the corporation

Indeed the ruralisation of town hospitals is a confession of failure of town-planning Since the local hospital will receive a continuous stream of outpatients and visitors, and since a booking system will distribute outpatient attendances throughout the day, the one essential for the site is that it should be very close to a good public transport service

159 It is equally important that key hospitals should be very close to a good public transport service since they will be nodal points for both patients, staff, and visitors, going to and from a wide area We consider that key *teaching* hospitals should certainly be urban , the life of a big town is in itself part of the training of the medical student For the rest, provided there is light, air, and quiet, we regard it as relatively unimportant whether key hospitals are urban or suburban We feel, however, that the case against the country key hospital—except in towns so badly built and planned that light, air, and quiet cannot be obtained—is valid The relative cheapness of country building sites is man-made and not a physically insuperable point And the contacts of town life add greatly to the happiness and efficiency of medical and nursing staff What holds for key hospitals holds equally for special hospitals

160 Long stay hospitals present a rather different problem In many of these, complete open air is essential Others have to provide facilities for open air work and colony life We think that the case for keeping them in the country, as at present, is good But great care should be taken in choosing sites for new hospitals to make sure that they are very near good public transport facilities

161 *Names of hospitals* —Great traditions of treatment, teaching, and research are bound up with the names of Britain's voluntary hospitals At all costs, these names should be preserved We consider that a purely geographical or functional name (except where sanctioned by time) militates against the growth of hospital corporate spirit We, therefore, hope that new hospitals will be given good names We deprecate also the numbering instead of the naming of wards A1 or B2 instead of "Charity" or "Dorcas" ward is a poor exchange

162 *Ambulance services* —Ambulances should be based on local and key hospitals and not run as a separate organisation Their present separation has arisen because of the divided control of the hospitals To make people work continuously as ambulance orderlies and ambulance nurses is to destroy any real interest in the sick which they may have

MEDICAL STAFF

163 We consider that the principles governing the work of senior medical staff should be as follows —

(i) All appointments should be advertised. Inbreeding should be discouraged, especially at teaching hospitals Primary selection should be by the medical committee of the key hospital concerned Final appointment should be by an appointments board composed of members of the regional office of the national health service of the regional medical advisory committee, of specialists in the subject concerned and possibly of additional assessors from outside the region Junior appointments up to registrar standard should be recommended by the medical committee, and confirmed by the regional office

(ii) The clinical and administrative ladders should be separate, and promotion and pay should be the same in both Movement from the one to the other should not, however be rigidly forbidden

(iii) No member of the senior staff should be confined to outpatient work, and none should be free from it The same applies to work at medical centres, and domiciliary consulting

(iv) The conditions of appointment, work, pay promotion &c , should be the same in all hospitals whether key, long-stay, special, or local medical centres

(v) Two types of appointment should be open to senior medical staff—whole-time and part-time Unless the post was specifically a whole-time one, as for example a university chair at a teaching key hospital or a research professorship at a special hospital, the choice of whole- or part-time work should largely rest with the candidate It should be open to him to revise his choice at not less than five-yearly intervals

(vi) Whole-time officers should have charge of larger units, with more beds and outpatients clinics than part-time officers They should be required to do domiciliary consulting under the national scheme for insured people, and should see and treat in small consulting-rooms and in single wards patients who had paid the additional insurance premium for private attention

(vii) Part-time officers should be permitted privately to see uninsured patients in hospital consulting-rooms, but not in hospital time—the fees to be collected by the social worker They should be permitted uninsured private hospital inpatients on the same basis, the hospital charging such fees as it deemed fit This would kill two birds with one stone consultation at hospital would be a guarantee to the patient of the efficiency of the consultant , and the pseudo-consultant would be left alone in Harley Street which would soon cease to have any cachet

(viii) At least one of the whole-time staff in each major subject in teaching key hospitals should be a university professor , this appointment should be made by the university concerned

(ix) Uniform national scales of remuneration for hospital staffs should be laid down We suggest the following approximate ranges —

(*a*) For whole-time seniors £1500 to £2000 , for whole-time deputies £900 to £1100

(*b*) For part-time seniors—if three quarters of the time, two-thirds the salary of the whole-time officer , if half time a third the salary of the whole-time officer We suggest less than a strictly pro rata basis, because we think men will only choose part-time work if they consider their earnings will thus be greater

(x) Adequate provision should be made for holidays, pensions on retirement and sickness

(xi) Movement from time to time within the hospital service should be encouraged, as also should travel at home and abroad, for the sake of gaining experience Such movement should not prejudice advancement, but rather the reverse

(xii) All senior hospital posts should be non-resident

164 For junior appointments, we propose little alteration in the existing procedure at voluntary hospitals We consider that every newly graduated medical practitioner should be compelled to hold a house appointment before being fully qualified legally Even with the present number of hospital resident posts, there appears to be no difficulty in this Indeed two compulsory posts is in fact physically possible The 1940 figures for England and Wales are as follows —

	Six monthly appointments	Total per annum
Voluntary teaching hospitals	87(+493)	1160
Voluntary non teaching hospitals	1048(+427)	2970
Municipal hospitals	712	1424
		5554

The figures in parentheses are for slightly more senior house appointments, all of which will presumably be filled by holders of junior posts If we assume that, in all 2000 posts will be filled by the promotion of those already holding posts, we are still left with 3500 posts per annum to fill The average number of doctors qualifying in this country per annum in the last 5 years was 1239 To this one must add, say, half the Scottish, Irish, and Colonials graduating here per annum, 570 (half the average for the last 5 years) Even so, there are enough resident posts to average out at about 2 per head

165 Every house-officer should therefore be encouraged to do more than one six-month house appointment Potential general practitioners, in particular, should obtain special experience of midwifery, pediatrics, and

senior, his deputy, perhaps a chief assistant, a registrar, one or two house officers, an almoner, as well as two or three clerks and secretarial assistants The number of hospital beds in each unit should vary from 40 to 80, depending on the type of work, and also whether the two seniors were part-time or whole-time Both seniors, the chief assistant, and possibly the registrar should do regular outpatient clinics at local hospitals (including the key hospital), and both seniors should have charge of beds in perhaps a ratio of two to three To each unit should be attached a number of single wards The number of units in a key hospital might be considerable For example, two general medical units (including gastro enterology and biochemical medicine as specialties), a cardiovascular unit, a pulmonary unit (including tuberculosis), a neurological unit, a psychiatric unit, an arthritic unit, a dermatological unit, a venereal unit, two general surgical units, an orthopædic unit, a genito-urinary unit, two ear, nose, and throat units, a plastic unit, an ophthalmic unit, two obstetric units, a pædiatric unit, two gynæcological units, and perhaps a children's surgical unit, might be a typical set-up There would be no rigidity in such an arrangement In one regional key hospital, for example, a plastic unit might be replaced by a neuro-surgical unit, and a general medical unit by an endocrinological unit Assuming an average of 50 beds per unit, a typical key hospital would have just over 1000 beds, plus its special blocks for fevers, minor illnesses and the chronic sick Pathology, radiology, anæsthetics and physiotherapy should constitute separate staff units Some regions at least should have one forensic medical unit

150 The administration of such a hospital should itself constitute a separate equal unit We regard it as unimportant whether the chief and deputy chief administrators are, or are not, medically qualified They should be administrative specialists, specially trained as such, and should certainly do no clinical work Where the senior administrative officers are laymen, routine medical administration should be in the hands of an RMO and RSO A hospital medical committee, composed of all heads of units and their deputies, should meet regularly to decide all medical problems We consider that representatives of the juniors in a key hospital, registrars, house-officers, and even clinical students, should sit on the medical committee We believe that this would have a most healthy effect in preventing staff squabbles, nepotism, and a general belief that the committee was acting only in its own interests Much of the committee's work would in fact be done by subcommittees It should make recommendations as to staff appointments to the regional authority, and these should seldom be disregarded In the event of conflict between the medical committee and the chief administrative officer, the committee should have the right of direct approach to the regional authorities

151 A similar nursing committee composed of the matron and representatives of the sisters and nurses and student nurses would be a desirable experiment

152 The lay committee or governing board should meet not more often than once a month It should be composed of existing members, whether of voluntary hospitals or local authority origin, plus medical and nursing staff representatives, and possibly one or two retired members of these staffs If it did not include members of a publicly elected authority, arrangements should be made for some general public or "consumer" representation It should receive the reports of the administrative officer and should deal with such other matters as was necessary

153 Where a key hospital was attached to a university or a medical school, these should be specially represented on the medical and lay committees Similarly the staff and hospital should be represented on the medical school committee

154 *Long-stay hospitals* —Attached to the appropriate units of each key hospital should be the necessary special treatment and convalescent hospitals These would be for pulmonary tuberculosis and other pulmonary diseases, cardiac invalidism (particularly for children), orthopædics (including accidents, and bone and joint tuberculosis), rehabilitation and convalescence of general medical and surgical conditions, intermediate and chronic mental illness, epilepsy, and mental defect Where new hospitals of this type were needed, it might be possible with profit to build combined pulmonary, cardiac, orthopædic and general country rehabilitation hospitals We think that such combined units would be profitable alike for patients, nurses, doctors, and students At each such hospital, the medical staff of the key hospital should have charge of at least a certain number of beds In addition, a staff of the house officer and registrar level would certainly be needed, and almost certainly higher specialist officers If more than two specialists were employed, a unit system should again be adopted, and exchanges of such specialists between the key and rehabilitation hospitals should take place at intervals If a medical superintendent was employed, the volume of his clinical work should be strictly limited, and visiting key hospitals and permanent specialists should be his equal in status

155 *Special hospital* —The specialised hospital, which concentrates on a single disease or group of diseases, is justified if it acts as a national centre of postgraduate teaching and research We doubt if there is room for one of each type of special hospital in each region We consider that specialised hospitals should operate on a national basis A great part of the present multitude of small specialised hospitals should be closed down, their staff and functions being taken over by the appropriate departments of key hospitals

156 We envisage two or three national special hospitals (of which one would usually be metropolitan) of each of the following types —

Pædiatric
Cardiological
Pulmonary
Neurological
Psychiatric
Dermatological
Venereal
Endocrinological
Gastro-enterological
Neoplastic
Traumatic
Orthopædic
Ophthalmological
Ear, nose, and throat
Midwifery
Gynæcological

Since these hospitals should exist primarily for postgraduate teaching and research, at least half the senior posts (arranged on the unit system) should be whole time, and often professorial The remaining senior staff might be specialists from adjacent key hospitals, but where this was the case the number of beds at the key hospital in the charge of the specialist should be appropriately reduced

157. It should be open to any doctor throughout the country to send a patient to a special hospital for consultation and treatment But the feeding of special hospitals with patients should more usually be done by affiliating them to one or more adjacent key hospitals The appropriate departments of these key hospitals would be correspondingly smaller Such a reduction would mean that some undergraduate teaching would be necessary at the special hospital, if the affiliated key hospital was itself a teaching hospital

158 *The location of hospitals* —Medical centres should be centrally placed in the locality which they serve, since —

(i) They would be general outpatient and emergency centres

(ii) The chronic sick, in particular, should be really near their friends

It does not necessarily follow that they should be in the centre of a town, though we see no inherent objection to this provided there is adeq

THE LANCET

LONDON SATURDAY, NOVEMBER 21, 1942

"THE END OF THE BEGINNING"

EVEN before the war, there were voices crying in the wilderness that all was not well with the medical services The burden of their cries was that preventable diseases were not being prevented , that the chances of avoiding death in infancy, in childbirth, from tuberculosis, and from rheumatic carditis were much greater among the rich than among the poor , that for most of the population such financial burdens were added to the burdens of ill health as to discourage early treatment , that the standards of treatment available in different places and institutions, and among different social classes, varied enormously , and that the income of those who cared for the sick ranged from the £40 plus keep and laundry paid to the probationer nurse to the £40,000 earned by the successful surgeon The whole picture was thrown into clear perspective not by a medical body but by a research organisation composed of sociologists, economists, and political scientists—in the PEP report of 1937 on the British Health Services The next milestone was the Government's noble miscalculation of the probable effects of enemy aerial bombardment From this sprang the first attempt at a national hospital service for the sick and injured The EMS was, and still is, a hotchpotch , but it has served its purpose, and has opened the eyes of many —among others, those of our special commissioner, whose plan for British hospitals filled our correspondence columns during the autumn and winter of 1939 Now, after nearly three years, we find the British Medical Association voting for a national medical corporation on just such lines as those which our special commissioner envisaged But that is jumping ahead

The lull in the fighting during the first winter of the war turned many people's minds away from the stalemate fronts to the future Looking back over the 1920's and 1930's was not a pleasant process for those with social consciences Few people really wanted to go back to the old ways But what was the right path to choose for the future ? The British Medical Association took the bull by the horns and set up a monster Medical Planning Commission There were many voices raised to deplore its procedure and composition ; but time proved their fears unfounded The BMA were not alone There were rumours of Royal College planning committees, students' planning committees, political planning committees and numerous discussion groups Many of these have foundered by the way, but this week we publish the results of one which has carried through the first part of its ambitious programme Medical Planning Research is not a LANCET sponsored body It is not a counterblast to the BMA Medical Planning Commission Its first aim, as set out in the medical press on its foundation, was to enable the "under 45's" to have their say, and special arrangements were made to overcome the war-time problems of geographical dispersal and inadequate transport But it was something more than a junior version of the Medical Planning Commission, as its report shows It took the patient as its starting-point, and not merely the patient in the surgery but the patient in his home It pledged itself to proceed by scientific methods Its attempt to analyse the problems of administration is something new in medical research It studies also the cost of health in relation to the national income and the national standard of living And it suggests a solution to the question of the future of the medical officer of health

The political parties have not been idle in medical planning, though so far the Conservatives have remained silent The Liberals have expressed themselves in 80 small pages[1] They adopt the health centre as the basis for general practice, a continuation of dual control of hospitals with state subsidies paid via the local authorities to the voluntary hospitals, and free treatment for all paid for out of general taxation The capitation fee is to be the basis of the GP's income, but private practice for both GPs and specialists is to continue Why anyone should pay for what he is entitled to receive free is not explained, for it is specifically laid down that the standards of treatment should be the same for all The Labour Party[2] are more concerned with social security than with the details of medical practice They look for a national medical service with salaried doctors for all, working through the local authorities The Communists[3] have confined themselves to practical proposals for increasing the immediate efficiency of the health services with a view to aiding production Finally, the Minister of Health himself[4] has assured us that the Government aims at supplying a comprehensive postwar hospital service to meet the needs of everyone, while retaining both the voluntary and the municipal services Payment by the sick of a proportion of the cost of treatment is to remain. Mr BROWN has so far not committed himself on the future of general practice, and it is reasonable to hope that his preliminary pronouncement on hospitals is a ballon d'essai rather than a final judgment The wise words of Sir WILLIAM BEVERIDGE have yet to see the light of day

There seems already to be general agreement—except in high governmental quarters—on many points the lower and middle income groups should have available a complete medical service, covering both home and institutional treatment, which should be paid for at some time other than during sickness , group practice and health centres should be the basis for a home doctor service, and the home doctor should take over the running of more of the special clinics now in the hands of whole-time municipal officers That looks like the end of the beginning, in the Prime Minister's happy phrase But some major questions remain to be faced and answered (1) Should the national health services be available to everyone regardless of income ? (2) Should the services be paid for by a contributory insurance scheme or out of general taxation ? (3) Should they be based on the local authorities, on a combination of voluntary hospitals and local authorities, or on a statutory national health corporation ? If general medicine As a rule, house-officers to special departments should first do a general post at their parent hospital or elsewhere All house appointments should carry a salary of at least £2 per week, in addition to board, lodging, and laundry Steps should be taken to improve the physical condition under which the resident medical staff live in many hospitals

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[1] Health for the People Liberal Publication Dept , 8 Gayfere Street London S W 1 1942 *1s*

[2] The Old World and the New Society The Labour Party Transport House Smith Square, S W 1 1942 *4d*

[3] Britain s Health Services The Communist Party of Great Britain, 16, King Street, W C 2 1942 *6d*

[4] *Hansard* for Oct 9, 1941

166. The next step beyond the house appointment should be the registrar or alternatively, the assistant at a health centre These posts should carry with them a real living wage, if non-resident, of at least £450 to £500 a year

167. The next step, that of RMO or RSO at a key hospital or medical centre or of chief assistant in a special subject at a key hospital, should be a post of considerable responsibility If resident, its salary should be no lower than that of registrar If non-resident, the salary should be £600 to £800 a year From persons occupying these posts, the senior staff would as a rule be selected There is much to be said for a rigid rule that no senior should be appointed who had not at least 6 months' or a year's experience as an assistant at a health centre

xvi The Social Doctor

168 One of the defects of the British health services in the past has been the great gulf fixed between the curative services on the one hand (the home doctors and the hospitals) and the preventive on the other (the medical officer of health, the various health maintaining clinics, and the environmental services) The gulf was not lessened by the entry of the MOH into a partly proprietorial relationship with the municipal hospitals The successful MOH often suffers in much the same way as the senior medical officer of a municipal hospital, as he goes up the ladder, he gets further away from practical medicine becoming more and more a pure administrator Another defect of our piecemeal system is the overlapping of functions of county and other MOHs, particularly in rural areas Rural areas also suffer from the part-time MOH, a home doctor who combines his general practice with local authority work

169 We propose that the MOH, hereinafter called the social physician, for each area should operate from an office located in the medical centre His area of operation should be roughly that covered by the health centres working to the medical centre He will act as health adviser to all local authorities working within this area, and as adviser on environmental problems to all home doctors in the area

170 His field of work will be the health of his community as a whole, and especially the environmental factors concerned in health and disease

171 His first duty should be the organisation and maintenance of vital statistics and a medical intelligence service He should take over the function of the registrar, and should receive all notifications of births, marriages, and deaths This would avoid the unnecessary duplication of the present system In the case of doubtful death certificates, he would be in a position to clear the matter up with the notifying doctor He should receive notification of all infectious diseases, under him, a small team of social workers should be available for home visiting in connexion with infectious diseases The local hospital records should be in his charge, as also should the records of all the health centres in his area To deal with this material, he would need a trained statistical officer and a small statistical staff He should also have mechanical calculating machinery, so that all statistics could be transferred to punched cards, and sorted mechanically when necessary His weekly vital statistics should not only be forwarded to his regional headquarters and to the Ministry of Health, but also to every home doctor in his area

172 His second duty should be the organisation prophylactic health services Immunisation services he will operate through the health centres Maternity, child-welfare, school medical services, and factory medical services, he will operate similarly It will be his responsibility to see that the community is properly served in these respects If necessary it will be his duty to advise the establishment of new health centres

173. His present duties with regard to food and drugs, sewage and water-supply, housing and sanitation, should be unchanged

174. His conditions of service should be identical with those of senior officers at key hospitals His primary employer should be the regional office of the national health corporation His position vis à vis his local authorities would thus be greatly strengthened The social physician working at a key hospital would cover only the area drained by the key hospital in its function as a local hospital In teaching key hospitals, he might well also occupy the position of professor of social medicine

175 In each region or subregion, a regional social physician should act as regional coordinator He should, however, be equal with his peripheral colleagues and not above them

176. Social physicians should be appointed in the same way as other specialists and consultants

xvii Postscript

177 During the 18 months since MEDICAL PLANNING RESEARCH was launched there have been great changes, and many of the 400 members, particularly those in the Forces, have found difficulty in making the contribution they hoped, none the less more than 200 drafts have been received Those dealing with the general aspects of the subject have been used in preparing this report It should be understood that it is an interim report necessarily much shorter than the original contributions which have gone to make it It cannot be held to represent the point of view of all the contributors, the aim has been to select the more constructive proposal and those most calculated to attract constructive criticism It is in fact designed to test public opinion This phase was envisaged in the original scheme, in which critical as well as drafting members were enrolled Individual members' drafts were not written for publication, they were intended for private circulation to othe critical and drafting members, but the size of the schem and the large number of members who are now in th Services abroad has made private circulation virtuall impossible Since the contributions were not intende for publication and many contributions diverge i opinion it has been thought best not to publish the name of the contributors, among whom will probably be th most vigorous critics of the interim report It is hope that MEDICAL PLANNING RESEARCH is a medium by whic doctors and others serving in the Forces can contribut to the discussion of postwar health services Medic opinion is on the move, and no desire to suspend judgment can alter this fact It is important, therefore, th men in the Services should make their contribution now the anonymity of MEDICAL PLANNING RESEARCH ma make it possible for them to do so without conflictin with Service regulations

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8 *Minist Lab Gaz* December 1940, p 300 January, 1941, p 7
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im under stress Many bad landers are suffering from a weakness of convergence, a condition eminently amenable to treatment, after which they experience no further difficulty In short, an inherited, constant or stable ocular muscle weakness is unlikely to give trouble, but a recently acquired heterophoria will so confuse the accurate judgment of distance as to make safe flying improbable In night approaching and landing, while stereoscopy is still necessary towards the finish when familiar objects are seen by the light of the flare path, the earliest phases of the approach are carried out by vertical parallax The pilot, circling the aerodrome to which he has been brought by blind-flying instruments, sees the flare path as a large T illuminated by separate and widely spaced lights He judges height and distance by the relative movement of these lights against each other He next turns towards the flare path on a bearing which will take him parallel to and just wide of the vertical limb of the T As he nears the ground the lights in the vertical limb seem to get closer together, until as he is about to touch down all of them will fuse into one Finally he ceases to group the lights as a system, but regards each as separate elements, gaining information about his final height from objects illuminated in the vicinity of each But something more is needed in a fast approach than the mathematical distribution of a series of lights There must be a suggestion of background and some familiar object dimly seen, otherwise attempts at landing are almost always too high, and it is here that a good night visual capacity will help the pilot Finally, although the rotating hexagon, depth-perception apparatus and other devices can detect those pilots who have no chance of achieving safety at night, they take little account of the two most essential qualities of all—confidence and morale These two qualities when present in good measure can make up for a host of small defects, and therefore no test must be allowed to overstep its usefulness and become an absolute standard by which this man is accepted and the next rejected

TAKING NOTES

IN the happy days when textbooks were few and duplicators had not been invented the student was largely dependent on his lecture-notes for reading material out of school hours But with modern facilities the medieval custom of note-taking is hard to justify NECHELES[1] of Chicago, speaking from a long experience of teaching physiology, maintains that 99% of his students used to write down what the lecturer said so arduously that they had little opportunity either to think or to grasp the significance of the subject Few teachers (or taught) will disagree with him After a hectic hour of illegible calligraphy the student leaves the lecture theatre with cramped fingers and confused mind, and even an evening of careful editing will not make his notes worth the time and trouble given to them Necheles has evolved a scheme of class secretaries which has stood up well to the key-test of examination results One or more students, depending on the size of the class, are asked to take notes of the lecture and elaborate them at home into a well-written paper This is then corrected and amplified by Necheles who adds the appropriate references to the literature, copies are then duplicated and distributed to each member of the class at a nominal price A different student is chosen as secretary at each lecture and the rest are asked not to take notes At the end of a course each student thus possesses a full and carefully edited set of notes which is of real value to him and, apart from the day or days on which he has acted as class secretary, he has been able to give his full attention to the lectures This is an elaboration of the plea made by a peripatetic correspondent[2] for a duplicated summary of the major points to be discussed at each lecture But unless such summaries were very full the student would probably still take notes, though not such copious ones An alternative method would be to interleave textbooks with blank pages which the student could take to the lecture and use for jotting down an occasional sentence amplifying what was already in the textbook This scheme would necessitate a complete programme of the lectures being available in advance Yet another useful procedure would be to issue the class with copies of any charts or diagrams used to illustrate the lecture which were not easily accessible elsewhere It is up to lecturers these days to support any labour-saving device of this kind which will smooth the path for the over-pressed student

Annotations

MEN IN CHANCERY

OUR peripatetic, returned from captivity, tells of wounded prisoners left behind at Dunkirk (p 627), of good conditions and bad, of courage and disappointment—especially that catastrophic disappointment when hopes of an exchange of prisoners failed Prisoners in good health need extra food, books, papers, games, sick and wounded prisoners need invalid foods, and the doctors taken with them must have drugs, instruments and medical books if they are to do the best for their patients The Red Cross and St John Ambulance Societies have these needs in mind, and are steadily supplying them as we at home give the means Those parcels of food are doing more than most of us had guessed, our peripatetic tells of measurable improvements in weight, vitamin-deficiency symptoms, hæmoglobin percentage and blood-pressure in our wounded prisoners after each distribution of parcels Such a target is worth as many direct hits as possible Donations can be sent to the societies at St James's Palace, London, S W 1

A PLEA FOR A CHAIR

THE Nuffield Hospitals Trust besides helping people to get into hospital is also ready to help people to stay out of hospital, and it is to this generous trait that the University of Birmingham is appealing through its vice-chancellor, with the support of its regional council, for a grant of £15,000 to provide the stipend of a professor of social medicine for the next ten years. If the money is forthcoming the university is ready to establish the new department at once, for it feels there is work urgently awaiting the chair-to-be. In a great manufacturing centre such as Birmingham many of the social problems are inevitably linked with industrial medicine and the department would probably begin by tackling these But the wider title which has been chosen would leave scope for discerning opportunism in its development Recent factory acts have given industrial medicine a new importance and many doctors and nurses are asking for post-graduate courses on the

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[1] Necheles, H *Science* 1942 96, 297

[2] *Lancet* 1942 ii 408

the medical profession decides in favour of a corporation (and so far the BMA Commission and Medical Planning Research provide pointers in that direction), there is a tough fight ahead The local authorities exert much parliamentary influence, and the voluntary hospitals have many spokesmen in high places In resolving these difficult questions, the observations of Medical Planning Research on the burden of ill health in the upper income groups, on taxation *v* insurance, and on medical organisation and administration will repay careful study

NIGHT VISION AND THE PILOT

ALL eyes are blind in true darkness, but there is always some light in the wide spaces above us, even in the worst weather, and under optimum weather conditions the human eye can see a dark object in the night sky 1000 feet to 3 miles or more away Individual ability to see in the semi-dark varies greatly, and while this was merely interesting in peace-time it has now become of vital importance that those men with good night vision should be singled out from the rest Fortunately, we have had at the head of the eye department of the RAF a man who foresaw this development

"Dark-adaptation" is too narrow a concept to embrace those qualities which are required in a successful night pilot, for many factors are involved, and the whole is best summed up in the term "night visual capacity" In semi-darkness the rods take over from the cones and the area of maximum sensitivity of the eye then lies not at the fovea but 6° from it—just to one side of the object looked at If the rod mechanism is to work smoothly the pilot must be in good health and not fatigued There should be no anoxia such as might result from high altitudes or over-smoking, and no vitamin deficiency, though there are few young men in this country so lacking in vitamin A that their night vision suffers thereby If all these requirements are present, dark-adaptation will have reached a near maximum after 45 minutes in a darkened room and night visual acuity will then be at its best But more is required of the good night pilot than complete dark-adaptation Although much night flying is done by instruments these must be supplemented by vision in approaching and landing For the night fighter pilot time is short, and friend must be differentiated from foe He will require that mental alertness and extra analytical power that will appreciate the form and significance of a dimly seen object the fraction of a second before the other man Is there any test which will single out such a man from his fellows ? As long ago as 1935 LIVINGSTON devised the rotating hexagon, an instrument by which the night visual capacity of potential airmen could be estimated under something like service conditions The background illumination of this test was carefully controlled and could be varied to approximate to a starlit night at one end of the scale, passing up through bright moonlight to early dusk or dawn conditions As anyone will agree who has spent much time testing vision, each test is something more than an estimate of visual acuity, and the alert brain will usually manage to read an extra line Candidates for the hexagon test—so called because six panels of a hexagon are simultaneously illuminated and six candidates examined at once—wear dark goggles in a lighted room for half hour and then enter the darkened test-room, where they sit for a further 15 minutes while the test is explained to them in the following words, quoted from LIVINGSTON [1]

"You are each seated in front of a panel, which will be illuminated and will reveal certain objects and letters similar in character to those which you have just seen There are four tests, each corresponding to a metal button on your boards, and each is exactly similar in technique You will find the buttons placed in such a way that you can feel three in series, followed by a gap, and then a fourth button You will note that each button corresponds to a transverse grooved line on the Braille card As the buttons run down the middle of your boards, there is therefore a left and a right Braille line Each test exposes first objects and next letters On the left space, you will write the names of objects recognised If you cannot do this, endeavour to copy what you see On the right space you will set down what you can detect of the letters These should be so drawn that the upper group is above the grooved line, and the lower group just below it The letters may be set in abnormal positions Copy them as you see them Each test is of one minute's exposure and test succeeds test without intermediate pause On each occasion, the illumination will be slightly increased, till you reach the third test Between this test and the fourth you will be subjected to one minute of glare from an electric lamp suspended above the apparatus During this time you must not look directly at the lamp, but slightly beneath it After this you will be given your final test The examination is then over"

Top score in this test requires 32 correct answers, but the average score is 20 About 3 5% of personnel record 30-32 marks and 2 5% less than 2 marks Cases presented for examination that have a history of defective performance in night flying come almost invariably from the lowest group From these tests candidates fell into two groups In the first were those who, on being shown a dimly illuminated object, began a series of guesses until they hit the right answer The second group waited until the clues were clear enough for them to be certain of their answer All subjects in whom there was a suspicion of malingering returned a blank card

For night approaching and landing the pilot needs a well-developed stereoscopic vision At one time it was thought that the stereoscopic faculty was a birthright, that it grew to full fruition at the age of 7 years and could not thereafter be improved This is now known to be wrong The hold on stereoscopic vision varies greatly with individuals, and where it is defective the response to treatment is usually excellent It is true that many efficient pilots have not this faculty, or are even one-eyed, but these men have had the disability for many years and have had time to adjust themselves to it Certainly the difficulties of pupil pilots who cannot land their aircraft are often due to poorly developed stereoscopic vision If a man has binocular vision he will learn to use it in estimating distance by the sense of depth it gives him and by the degree of convergence required to focus an object with both eyes When he first takes to the air the stress of circumstances may cause his poorly developed stereoscopic vision to break down so that he becomes monocular His distance judgment fails him when he most needs it and he becomes a danger The man who never had stereoscopic vision will learn to make use of other aids—parallax, relative size of objects and so on—which, though less helpful, will not fail

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[1] Livingston, P C *Irish J med Sci* June, 1942, p 177

In England Now

A Running Commentary by Peripatetic Correspondents

As an oxaluric myself I was very interested in the chemical confirmation in your last week's issue of my gastronomical researches. It started when I developed a horrid pain in London after the very poached egg on spinach lightly touched upon in your subsequent annotation. I had become fond of spinach while working (and eating) in Paris, and it never worried me there. So I took my pain and my problem to a colleague. He knew the answer because he too was an oxaluric subject and he avoided trouble by taking cream with his gooseberry tart. The spinach difficulty is entirely culinary. In France it is "creamed" with butter; in England it is served slightly damp. The point of all this lies in the application of the "strawberries and cream" principle to other oxalate-containing foods. Milk may be all right but rather dull. Cream and butter will do as well. Tomatoes need salad dressing (prewar). Mr Barratt has taught us why, and the answer is simply calcium. Well, well.

* * *

The story of the wounded who came back from Dunkirk has long been known. Far less is known about their more unfortunate brothers who, in addition to being wounded, had the misfortune to be taken prisoner. At a rough estimate there must have been some seven or eight thousand of them who lived to be taken into the hands of the German medical services. They were collected and housed in hospitals, schools, barracks and public halls throughout France and Belgium. There were British wounded in Rennes, Rouen, Paris, Lille, Bethune, Hazebrouck, Brussels, Malines, Zuydcote, Bruges, Namur, Ghent, Amsterdam, Enghien and many other places. The wounded remained in occupied territory for up to eight months, the last large batch to leave for Germany were the badly wounded of the 51st Division, who left France in late February, 1941. Stories from the different groups of men gave conflicting reports regarding their condition and treatment. It was my privilege, among many other doctors, to stay behind with the wounded, and during the first six months I worked under conditions varying from very bad to good. It is unnecessary to describe the appalling conditions which had to be endured during the days just before and after capture. Shortage of water, food and shelter was, in many places, acute, and that alone may indicate what hardships the wounded had to bear. Gradually conditions improved as they were moved away from the battle areas into centres where water, food and medical treatment were obtainable. In some cases the improvement was comparatively small—many spent three or four weeks on the same filthy stretcher and lived on a diet of black bread and beans. I remember arriving at a hospital one night with a convoy of 350 badly wounded cases. There was no room in the hospital, so the stretchers were placed in gutted sheds, and the only equipment with which we were provided during the night was one small saucepan of soup and three phials of morphia.

In early July, 1940, some fifty compound fractures of the lower limbs were sent to Brussels and I had the luck to accompany them. Here, we were received into a most efficient hospital with a bungalow pavilion to ourselves. There were separate eight-bedded wards, spring beds and a good operating theatre and portable X-ray apparatus. It was staffed by fully trained Belgian nurses. The food was excellent and the medical equipment good. The immediate improvement in the morale of the patients and in the healing of their wounds was as remarkable as were the conditions themselves. Two months later I left for Malines where some two hundred British wounded were housed in dark, damp barrack rooms. The food was quite inadequate and of poor quality. The patients were pale and solemn and their wounds showed little tendency to heal. Most of the wounded throughout the occupied territories were fed on a low maintenance diet which was far from sufficient to support the proper healing of wounds. They were therefore, dependent on their friends in the occupied territories for extra food. Thanks to the energy, ingenuity and courage of these people the goods were delivered. In most places the Germans forbade visitors or parcels to reach the British wounded; but this only stimulated the influx of the most nourishing food that could be found. A great deal is owed to the people of Northern France and Belgium who risked so much to save our wounded. Many stories of bravery and self-sacrifice could be told of women who feared nothing so long as their parcels reached the patients.

Gradually, as the war developed into a more serious affair for our opponents, those in the occupied territories were evacuated into lazarets and camps in Germany. Here, the conditions were uniformly poor. There was overcrowding and inadequate food and medical equipment. Nevertheless, the men rose to the occasion. Their morale was good. Physical training and rehabilitation classes were started and joints began to move for the first time in six months. The British Red Cross parcels began to arrive in January, 1941, and these did more than anything else in helping the wounded to get well. In one camp, charts of weight, vitamin-deficiency symptoms, hæmoglobin percentage and blood-pressures were kept before and after each parcel distribution. The results showed an astounding improvement at first followed by a steady improvement as other parcels arrived. Artificial limbs were made by our own men out of pieces of wood, plaster-of-paris, jam tins and other odds and ends. One noted firm known as Cook, Cripps and McDonald, in which Cook did the plaster work, Cripps the metal and McDonald the wood-work, made over a hundred artificial limbs. These were tough enough to allow the amputees to box or play football and basket ball.

In September, 1941, the Repatriation Scheme suddenly raised its fair head over the horizon, and all those—some 1400—who had passed the Mixed Medical Commission were collected together for going home. The centre rendezvous was a small village, and here the wounded spent three days and nights in an open field. Two long and well-equipped trains eventually arrived and a journey, which must have been one of the happiest ever, began. Each man was issued with a whole Red Cross parcel for two days, which was far more than enough. When the trains entered Belgium and later France the tracks were lined with crowds of people waving and giving the "thumbs up" and victory sign. Our men had not forgotten them. Now it was their turn to give to those who had helped them before. They threw the contents of their parcels into the crowds. This continued throughout Belgium and France. Handkerchiefs waved, kisses were blown and eyes were moist as the people stood three and four deep to watch the "Tommies" go past. Needless to say, everyone arrived in Rouen with empty haversacks and smiling faces. They eagerly searched for the signs of a boat but there were none. As days passed and no boat appeared, faces grew longer and longer. Eventually the truth was obvious, the disappointment colossal and once again our men had to swallow hard, pull in their belt, hitch up their wooden legs and say "C'est la guerre." During last December and February they left Rouen for Germany and Poland and once again said "Au revoir" to their friends in the occupied territories, but their spirit was fine and will last to the end.

* * *

He was old and very Scots, a neat and tidy figure in his Sunday clothes. The job he was after was that of a labourer in a Service establishment. He was somewhat unsteady in his walk and had a slight asymmetry of the features. He sat down and declared that he was in excellent health and very anxious to begin steady employment again. His systolic pressure was so high that my sphygmomanometer failed to register it, he had arteries like twigs, his eyesight was poor, and there was some weakness and wasting of his left arm and leg. Inquiry elicited the fact that he had suffered "a wee bit stroke" about eighteen months previously, but though it had taken a long time and a deal of perseverance he now felt as good as ever. His own doctor had warned him of his danger at the time of the stroke, but in spite of this and even though he received an adequate pension, his conscience worried him whenever he heard of the shortage of labour and so he thought he had better work. His failing eyesight and inability to do fine work with his left hand prevented him from continuing in his former skilled occupation, and so labouring seemed to him his obvious vocation. A breath of fresh air, thus, after the tales one hears about young adults claiming exemption from fire-watching and night shifts on flimsy pretexts.

subject The present week-end lectures and short certificate courses can only be a stopgap and do not acceptably meet what will probably be an increasing and continuous demand The university foresaw the need some years ago, perhaps too soon, for its department of industrial medicine failed—the vice chancellor suggests mostly through lack of sustained financial backing Its main source of income was annual contributions from industry, but Birmingham's experience suggests that these should be welcomed to supply the butter rather than to buy the bread If the trust sees its way to make the grant the new professor will know that his department has ten years in which to find its feet and prove itself indispensable to medicine and industry in the Midlands

ALIMENTARY HYPOGLYCÆMIA AFTER STOMACH OPERATIONS

AFTER gastrectomy and gastro enterostomy patients often show an abnormal glucose-tolerance curve, usually said to be due to rapid gastric emptying This curve, sometimes called the lag curve, rises higher, reaches a maximum later, falls more quickly and often falls to a lower level than the normal curve At times during this hypoglycæmic phase symptoms are complained of Do such hypoglycæmic symptoms arise in these patients after ordinary meals ? In an investigation in which many case-histories were taken and some hundred glucose tolerance curves plotted Evensen[1] set out to answer this question Of 38 gastro enterostomy patients 30%, and of 95 gastrectomy patients 15%, described hypoglycæmic symptoms during the test, compared with 6% of 50 normal controls and 8% of 50 patients suffering from non-operated ulcer More interesting still, 36% of the gastro enterostomy patients and 11% of the gastrectomy patients complained of hypoglycæmic symptoms after ordinary meals The symptoms were not unlike those of mild degrees of insulin hypoglycæmia—hunger, weakness, sweating, tremors, clouded vision, palpitations, paræsthesiæ and psychic disturbances in varying combinations and of varying intensity The symptoms appeared 2–3 hours after a meal and characteristically disappeared after ingestion of more food Nearly all the patients reported that strenuous or unaccustomed work shortly after meals predisposed to an attack Following up this point Evensen, in agreement with some other workers, found that the glucose-tolerance curve of normal people was much lower during even mild exercise, and he concluded that the performing of work after meals may be a contributory factor to the production of hypoglycæmic symptoms in patients after stomach operations The diagnosis of the condition presents no difficulties, once it is thought of, and the treatment is simple—rest and something to eat Even if untreated the attacks usually pass off in 10–20 minutes

FIFTY CLINICAL YEARS

THE transient and incalculable human body can always spring another surprise or two on its investigators We try to pin it down with our tests, we measure its functions more and more accurately, but it remains elusive—a whole which will not be confined to the parts so neatly docketed in laboratory and post-mortem room At the bedside a man of quick perception and long experience may come to be a good guesser, he may be able to predict things correctly about the human body (say) seven times out of ten He does it by relating the laboratory and X-ray findings in a given case to what he has picked-up, consciously and unconsciously, about sick people during his years of practice, and this ability is what we call clinical sense For fifty years the *Clinical Journal* has published the sort of articles which can help a man to develop this valuable quality—records of observation and experience which will join the data in the pigeon-holes of his mind and add to the of knowledge, remembered or forgotten, which n his judgment when he is considering a case The which now appears every two months, can look back a sound record Many eminent teachers have conti buted to its jubilee number, their names star the cov but we miss the name of the editor who can call so free on this galaxy of talent Dr J R T Conner has bee the guiding spirit of the *Clinical Journal* almost from t start and the sureness of his touch has become a by wor among his fellow craftsmen

KOILONYCHIA

SPOON nails are a classical *sign* in iron deficienc anæmia, and students are taught to glance at the nail while they take the patient's pulse Iron deficienc anæmia is commonest in women, and spoon nails ar therefore regarded as a feminine prerogative Th condition has been known for about 50 years, Croker i America used the term "spoon nails" in 1896, Heller i Germany introduced koilonychia in 1900 In 191 Knud Faber called attention to the frequent occurrenc of koilonychia in the then recently distinguished idio pathic hypochromic anæmia, and since that time it has become well established that koilonychia is part o the syndrome of microcytic anæmia, achlorhydria and glossitis which is seen particularly in middle aged women about the menopause and responds dramatically to adequate doses of inorganic iron The characteristic features are described by Clarke[1] of Boston as "an everted distal edge, flat lateral margins, and a spoonlike concavity of the finger nail" This striking change has received a lot of attention, but it occurs in only about a third of anæmic patients Women who have their hands in water a great deal, especially if alkaline washing materials are used, are said to be more liable to develop spoon nails and there is an impression that they are mainly seen in the charwoman class of patient Milder degrees of nail change such as brittleness or flattening are much more common That koilonychia is especially associated with iron deficiency receives confirmation from the observation of Swedish workers,[2] who, on the basis of serum iron determinations, detected cases of iron-deficiency without anæmia, three of their patients had koilonychia and in two the condition was cured by iron treatment Clarke has described an unusual case of koilonychia in a man with hypochromic anæmia A painter of 46 had a typical microcytic anæmia with achlorhydria, no evidence of lead poisoning or any other disease was found so he was given large doses of inorganic iron with excellent results and the koilonychia disappeared Seven years later he was seen again with a recurrence of the anæmia and koilonychia The anæmia was again typical, with a mean corpuscular hæmoglobin concentration (MCHC) of 24%, but ferrous sulphate in adequate doses did not increase the MCHC beyond 27%, nor did the koilonychia disappear Investigation showed some free HCl in the gastric juice after histamine injection, X ray of the alimentary tract was negative, but some chronically bleeding piles were discovered, after these had been dealt with further iron treatment restored the blood picture (MCHC 33%) and the nails to normal This case illustrates well the close relationship between koilonychia, iron deficiency and anæmia, and reminds us that this combination does occasionally occur in the male, and when it does that thorough investigation for causes of loss of blood is always necessary

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THE next session of the General Medical Council will open on Tuesday, Nov 24, at 10 A M

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[1] Evensen, O K *Acta med scand* 1942, suppl 126

[1] Clarke B G *New Engl J Med* 1942 227 338

[2] Waldenstrom J and Hallen L *Acta med scand* 1938, suppl 90

URETHRAL ANÆSTHESIA

SIR,—The following method of anæsthetising the male urethra for cystoscopy or instrumentation may interest urologists

A special ball-ended needle made by Down Bros (*Lancet*, 938, i, 27 and 723, 1939, ii, 425) is lubricated and passed down the urethra into the prostatic segment The anæsthetic solution preferred is injected slowly by means of a Record syringe and the needle is then withdrawn gradually while light compression is exerted on the penis to prevent regurgitation of the solution. The needle is withdrawn until the ball at the end of it lies just internal to the external meatus, where it is left acting as a most effective temporary plug The syringe, which is left attached to the needle, is laid down in a convenient position on the table After five minutes the urethra will be satisfactorily anæsthetised and the needle can be removed The needle is passed with great ease and in the majority of cases the patient is hardly aware that the manœuvre has been carried out

This procedure is also of value in facilitating the passage of a soft rubber catheter in old men with acute retention of urine, especially those on whom previous attempts at catheterisation have been made before admission to hospital and who are in a state of defensive spasm

Romford D LANG STEVENSON

ANOTHER REASON FOR NOT SNEEZING

SIR,—Dr Theodore James's letter of Nov 7 interested me because two years ago it occurred to me that the initial sneezes preceding a cold might be a seed-sowing property of the cold virus and not a reflex effort of the host to throw off the infection, examples in nature are many from the common burr to the thistle-down. So it would be beneficial to thwart this attempt to disseminate the virus Since stifling these early sneezes I have been freer from fully developed colds for these two years than ever before, but I also take a large dose of bicarbonate of soda

Park Crescent, W 1 C B HEALD

EPIDIDYMITIS

SIR,—In your annotation of Oct 24 (p 490) the statement is made that gonorrhœa is the commonest cause of acute epididymitis Such a view is not borne out by experience Since the introduction of chemotherapy in the treatment of gonorrhœa, epididymitis has become much rarer, and in the pre-M&B days it was not a common complication unless too great a pressure was used while giving the urethral wash-outs In my experience acute epididymitis occurs most commonly in non-gonococcal (e g, *B coli*) infections of the lower urinary tract

St James Hospital, S W 12 HENRY K VERNON

THE AMPUTEE'S POINT OF VIEW

SIR —I should like to offer my respectful congratulations to the woman who " when her below-knee artificial leg was fitted was delighted to see herself in the glass standing on two normal and evenly shaped legs (*Lancet*, Oct 10, p 427) I underwent a through-knee amputation many years ago Ever since I have sought not an artificial leg that would permit me to dance as long as I liked but one that would enable me to do my work in comfort and security I have not found it Here are instances of what I have found the knee-joint of one leg has broken four times in the past ten years, and repairs during that time have cost me £22 10*s* In the same period repairs to another leg have cost me £6 One expensive leg fitted so badly that if I walked two miles on it the stump got raw My experience justifies my saying that an artificial leg is a crude nerve-racking contraption, costly to buy and costly to maintain

LPCPI.

ROYAL SANITARY INSTITUTE —Lieut -Colonel D J Anthony MRCVS, will deliver the Benjamin Ward Richardson lecture at the institute, 90, Buckingham Palace Road, London. S W 1, on Wednesday, Nov 25 at 2 30 P.M. He will speak on the state of meat inspection in Britain at war

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M P

WE had two King s Speeches last week one proroguing Parliament on one day and a second opening a new session on the next day The speech proroguing Parliament, which was read by the Lord Chancellor, dealt to the extent of six columns of Hansard almost entirely with the history of military operations and political arrangements between the Allies, the speech delivered by the King when opening Parliament was shorter, but opened up the larger political aspects of the world struggle, and will provide the opportunity for lively debates

This year the debate on " the humble address to be presented to His Majesty " is to be thrown open for two or three weeks, and there are already a number of amendments on the order paper and there will be debates on conditions in the services, on old age and widows pensions, on pensions appeal tribunals on equal pay for men and women on health and on the Atlantic Charter, as well as on the general war situation and many other special issues Prof A V Hill has sponsored the amendment on health questions which will range over a wide field from improvements in factory hygiene to immunisation against diphtheria An answer to a Parliamentary question shows that in only two county boroughs (Birmingham and Bradford) have at least half the children under 5 been immunised

During this debate the new regulation 33B under the Emergency Powers (Defence) General Regulations (see THE LANCET Nov 14 p 589) aimed at the control of venereal disease will be debated, probably with approval for the most part The procedure safeguards the medical practitioners concerned against action for defamation or breach of professional secrecy, and in view of the increase in venereal disease especially syphilis since the war began, it is not expected that any important section of opinion will object to the far-reaching powers conferred by the regulation, with the information thus obtained about the distribution of venereal diseases it should be possible to arouse the public conscience by well-directed propaganda on public health lines And here we can learn something from the Soviet Union, whose hygiene propaganda against syphilis and gonorrhœa has been as realistic as our own against diphtheria

The victories in Egypt and Libya and the successful developments in North Africa have produced in the House a more buoyant mood, but one in which political controversy is not likely to be entirely absent Sir Stafford Cripps has made it clear that " controversial legislation ' should be avoided but it is by no means certain that the House will agree It is felt that the preparations for victory having taken so long the preparations for a successful peace may also be lengthy More and more about the preparations for a successful peace and the firm foundations of reconstruction will be heard in the House and, as time goes on. more about health education and the social services, and the Beveridge report on all-in social security proposals

QUESTION TIME

Health of British in Hong-Kong

Mr R K LAW under secretary for foreign affairs, informed Sir JOHN WARDLAW-MILNE that from reliable first-hand evidence which had recently become available, it was apparent that conditions at the Stanley Internment Camp in Hong-Kong had considerably improved since the early days At the end of July the general health situation could be regarded as satisfactory There had been no major epidemics in the camp, though there had previously been some cases of a mild form of dysentery There had, too, been some cases of beri beri, which were being treated as well as possible in the absence of suitable drugs Medical supplies in general were running short and the International Red Cross Committee were doing their utmost to ship them to Hong-Kong There had been very few deaths in the camp and those that had occurred were due generally to organic diseases During July a medical examination had been made by a British doctor of all persons in the camp with results which showed a

Letters to the Editor

THE CHRISTMAS GIFT

SIR,—It is always with a feeling of hesitation, perhaps of fear, that I address this letter to you at this time of the year; hesitation and fear lest I should fail to state the cause effectively to your readers. But in my 25th year of office as president of the Royal Medical Benevolent Fund and as an old man myself, may I once more appeal on behalf of old doctors and their loved ones that the *Christmas Gifts fund be continued in 1942*. *A gift* of £2 to each of our beneficiaries on Christmas Day to bring some comfort, perhaps warmth or an unaccustomed enjoyment to homes where every penny has to be considered, is my desire. Will all friends who have helped me in the past do what they can again this year, and will others come forward as contributors to take the place of those who have had to drop out.

All contributions should be addressed to the hon. treasurer, Royal Medical Benevolent Fund, 1, Balliol House, Manor Fields, London, S.W.15, and cheques should be made payable to the "Christmas Gifts Fund."

THOS. BARLOW,
President, R.M.B.F.

CÆSAREAN SECTION AND THE CRUSH SYNDROME

SIR,—Mr. Paramore makes statements which should not go unchallenged. I have no views as to the causation of postpartum suppression of urine. This must be a rare complication "in women previously apparently well" unless an accidental hæmorrhage has occurred, and little precaution need be taken in midwifery practice to prevent it in the absence of pregnancy toxæmia or accidental hæmorrhage. Many of us however agree that there is a definite place for spinal anæsthesia in operative obstetrics, but this case can be spoiled by its injudicious use. Surely Thomas was right in deprecating spinal anæsthesia as the method of choice when antepartum hæmorrhage has brought down the blood-pressure very low—and even after transfusion. Mr. Paramore states that since 1929 he has always done the lower-segment cæsarean section. This operation was designed for cases of disproportion in labour; its application has been extended, but there are still indications for the classical operation. I did one a few months ago for a true case of locked twins and I would defy even Mr. Paramore to have delivered them by the lower segment.

I have seen very few cases suffer from shock after using a heavy spinal anæsthetic such as procaine, in the form of 'Planocaine' 5% 3 c.cm. Mr. Paramore's advice to put every patient after cæsarean section or forceps delivery under spinal anæsthesia into the Trendelenburg position is open to question. It is unnecessary and indeed negatives to some extent the virtue of the lower-segment operation which was intended to lessen the risk of infection of the peritoneal cavity and to allow of cæsarean section in cases suspect of infection. To withhold fluids as suggested and to restrict food after a cæsarean operation is unphysiological, means extra suffering for a thirsty patient, lowers resistance, invites infection and will imperil lactation. Mr. Paramore asserts that after he does a forceps delivery "no complication ensues when asepsis is assured." There must be many of us who can only hang our heads in shame to think of the occasional pyrexia, white leg, or even embolism, that some of our less fortunate patients have developed. Asepsis can never be "assured" in midwifery practice.

Carlisle. GEO. P. MILNE.

DIAGNOSIS OF BREAST TUMOURS

SIR,—An annotation in your issue of Oct. 3 (p. 402) referred to the work of Dawson and Harvey on the correlation of the macroscopic and microscopic diagnosis of mammary cancer. This paper showed that there was a high degree of accuracy of diagnosis by sight and touch in mammary cancer by the experienced surgeon and pathologist. In 111 cases where the whole breast was sent for examination following mastectomy there was only one in which an error in macro-diagnosis was made. In their commentary at the end of that paper they stated that "... rapid diagnosis by means of a frozen section or by staining the surface of an excised section of tissue adds little if any certainty in breast cases." Your annotation, however, sums up as follows: "It looks as though the surgeon should only send for microscopy those breast tumours about which he is doubtful." This is a very different matter, and it would not be in the patients' best interest if the result of Dawson and Harvey's excellent paper was to discourage surgeons from sending mastectomy specimens for microscopical examination.

The treatment of carcinoma of the breast is both a surgical and a radiotherapeutic problem. To the radiotherapist a careful microscopical examination of the mastectomy specimen is of great importance in deciding what postoperative radiotherapy is desirable. What he wants to know is not so much that the tumour, which was clearly a carcinoma macroscopically, was confirmed as such microscopically, but rather how that tumour was behaving in that particular patient, in what directions and by what paths it was spreading, whether it was probable that the whole of the cancerous tissue had been excised, or where recurrence was likely to occur. For this purpose detailed microscopical examination of tissue from the limits of the region excised, to see if invaded tissues have been cut through, is necessary. This goes far beyond a mere confirmation of a confident macroscopical diagnosis.

Far too little consideration has been given to the function of the pathologist in reporting the mode of spread and likely site of recurrence from an examination of tissues excised in the treatment of cancer. Such detailed pathological work carried out at this hospital has proved of great value in the planning of postoperative X-ray treatment. The pathologist is not merely a person who, by attaching a label to the case, allows of convenient classification, but an important member of a team which decides what treatment is required.

Royal Cancer Hospital,
Fulham Road. D. WALDRON SMITHERS.

*** We were thinking only of a short-term policy for *a period of pressure on time and staff.*—ED. L.

MALE NURSES

SIR,—My committee, an association run by Naval medical officers to help Sick Berth staff to find suitable employment on being discharged to pension, desire to draw attention to a source of supply of well-trained male nurses which appear to have been overlooked in the reports of the Athlone and Horder committees. Naval sick berth ratings are trained at the expense of the Admiralty, and efficiently carry out the sick nursing in Royal Naval hospitals, depôts and ships. The qualifications and Service examinations for promotion in no way fall short of the requirements for the certificate of the state-registered nurse. After at least 20 years service they retire on pension, and those who wish to make use of their training find themselves unrecognised as possessing any nursing qualifications. A letter to this effect has been sent to the Minister of Health. Many medical men at present serving as temporary Naval medical officers must have felt the advantages of having such reliable, capable and experienced sick berth ratings to assist them. These men should be given a definite status in any Nursing Act that may come into force.

J. FALCONER HALL,
Hon. Secretary, Central Council, Royal
London, N.W.6. Naval Sick Berth Staff Associations.

R.S.M.: OBSTETRICS

SIR,—May I correct the false impression made on some of your readers by the report in THE LANCET of Oct. 13 (p. 511–512) of my contribution to the discussion on Oct. 16 at the meeting of the Section of Obstetrics and Gynæcology of the Royal Society of Medicine? Far from accepting the conclusions of the work of Ebbs and Tisdall in Toronto, I pointed out that the controls were not comparable to the subjects of the experiment and that the conclusions in regard to infantile deaths were valueless. I did not say that I thought the number of cases investigated in the research sponsored by the People's League of Health was too small, though I consider the conclusions drawn by the authors of that work are not warranted.

Harley Street, W.1. DOYNE BELL.

e Thrimble in 1887 and they had three sons and a ghter Their second son, Dr E R C Walker of rdeen is now a prisoner of war

STANLEY WALTER PRATT

LOND , SURGEON LIEUTENANT R N V R

Lieutenant S W Pratt, who was reported presumed killed," after the loss of HMS *Dorsetshire*, in the Bay of Biscay last April, graduated from University College Hospital in 1936 A fellow student writes "Stanley Pratt worked with enthusiasm and energy, being specially interested in surgery and obstetrics, and he also took a great interest in the social and sporting activities of the college and hospital He played rugby regularly and also a good deal of lawn tennis and squash He was an understanding and sympathetic companion, and his sense of humour was com- ed with an acute perception which made his friendship uable" After qualifying Pratt held house appointnts at his own hospital and at Leicester Royal irmary He joined the RNVR in May, 1940

WALTER TYRRELL BROOKS

M A OXFD, M B LOND

T is now some years since Dr Walter Brooks retired l slipped quietly away from Oxford with his best work acclaimed But he is not forgotten there and many his friends, especially at the hospitals, when they heard his death at Swanage on Oct 14 gratefully recalled a od life spent in helping the sick of yesterday, today and morrow Brooks was born in London in 1859 and m King's College School he went to Christ Church, ford, and obtained his MA degree before returning to ndon to study medicine at KCH He qualified in 82 and a year later graduated with honours in medicine d set up in practice at Oxford Soon afterwards he s appointed to the staff of the Radcliffe Infirmary, but s outlook always remained that of the loved and trusted mily doctor rather than the hospital physician To e children at Lynams and Radley, where he was for ars school medical officer, and to the undergraduates Brookie" was more like a friend than a doctor, and ith his wide circle of friends it was no wonder that he as elected a university coroner after a contest with a ughty opponent His administrative work left a real lough unappreciated mark on the town After the st war, during which Colonel Brooks served as officer-in- arge of the medical division of the 3rd Southern eneral Hospital, he was appointed administrator under e Ministry of Pensions of the Wingfield Hospital, and y his astute strategy he later secured this hospital at mall cost as the permanent centre of orthopædic surgery n the district He was also vice-chairman of the adcliffe for some of the most important years of its istory, and loyally supported Mr Cronshaw in developng its work and in founding the Osler tuberculosis pavi- ion and the Sunnyside convalescent home Brooks was good churchman and a still better Christian gentleman

E M

Dr THOMAS STANISLAUS McMANUS has died in Salisbury, Southern Rhodesia Born at Cavan he graduated MB NUI from University College, Dublin, in 1928 After holding appointments at All Saints' Hospital, London, St Mary's, Plaistow, and the Miller General Hospital, he spent some years in America before he finally settled in Salisbury in 1937, where he quickly won a reputation for medicolegal work He leaves a widow and an infant son

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The London County Council have opened their hospitals to medical visitors to this country who are in the forces, and Service doctors or nurses from overseas who would like to visit LCC hospitals or stay there during short leave should get into touch with the Medical Officer of Health, London County Council, County Hall, S E 1

Notes and News

THAT INWARD EYE

THE 74,000 blind people in England and Wales are a genuinely cooperative society the blind help the blind in ways that the old saying overlooked , and of course they have many sighted friends too The annual report of the National Institute for the Blind tells of bombed homes here and there, of difficulties about paper, the loss of a million gramophone needles and a few other hitches incident to war , but it tells too of work maintained, difficulties overcome, postwar plans already germinating and, above all, of the cheerful and spirited confidence of the blind which is always such an eye-opener to those who can see From the presses at the National Institute, Braille books, periodicals and music spread to the whole country and even still, though in limited quantity nowadays, to far corners of the empire At Brighton, Moon books and periodicals—easier for old people to read than Braille—are sent not only to English blind but to those in America Then people with a Talking Book machine can listen to books recorded on gramophone discs by first-class readers , and wireless sets are distributed to those who lack them, as well as any other personal help that is needed The institute's school of massage stands in Great Portland Street Sunshine Homes for blind babies are at East Grinstead and Leamington , the one at Southport was bombed, but a new one is being opened in Northumberland At Worcester College and Chorley College blind girls and boys of promise get their chance of higher education , and there is a home in Devon for those who are backward as well as blind There are homes for the old, holiday homes, convalescent homes, homes of recovery, and a new venture is a home where married couples of whom one partner is blind can live and work Among the homes of recovery for war-blinded civilians, America Lodge was the gift of the Blind War Relief Society of America to the British blind Captain Sir Beachcroft Towse, VC, chairman of the institute, is confident that friends of the blind will go on helping them , and he has a long experience to confirm him in that belief

HOME GUARD

IT was stated in our Students' Guide (*Lancet*, Aug. 29, p 251) that if a HG medical officer "cannot reach the aid post or hospital, or is not needed there, he is at liberty to report to his battalion headquarters, which means that he will come under the orders of the battalion commander and will in effect be mustered" We understand that this is not strictly correct The Army Council instruction runs "Where these civil duties permit they will keep in touch with their respective units and sub-units, rendering such service as they can" HG doctors are not, in fact, mustered in these circumstances and their prior duty is still to their civil commitment to which they may return at any time Moreover, every HG medical officer, whether mustered or not, is eligible for disablement or pension if he suffers an injury attributable to HG service

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Royal Society of Medicine

On Monday, Nov 23, the section of odontology will meet at 4 30 PM, to discuss the treatment of pulpless teeth The openers are to be Mr W Stewart Ross, LDS, Mr A Bulleid, MRCS, LDS, Prof W E Herbert, MRCS, LDS, and Mr R G Torrens, B Dent Sc On Nov 24, at 5 PM at the section of medicine, Lord Horder, Surgeon Captain Desmond Curran Brigadier J R Rees, Group-Captain R D Gillespie and Dr W Fairlie will open a discussion on functional nervous states in relation to service in the Armed Forces On Nov 26, at 4 30 PM, the sections of urology and neurology are holding a joint meeting when Mr F J F Barrington, Mr John Everidge, Mr Clifford Morson and Brigadier George Riddoch are to speak on treatment of the paralysed bladder At the section of disease in children at 2 30 PM on Nov 27, Sir Arthur Hurst, Dr G W Bray, Mr James Crooks, and Dr C H Rogerson will open a discussion on asthma in childhood At the same hour, Dr A H Gale will read a paper to the section of epidemiology on variations in the mortality and incidence of the common infectious diseases in childhood over a century great improvement in health since May, when the conditions were at their worst There had been two medical surveys of the children in the camp The first survey in April/May had given an unsatisfactory result The second, in July, showed a great improvement, thanks to the successful efforts of the camp welfare committee in procuring food, including milk, to supplement the children's rations Food was quite inadequate at first, but there had been a marked improvement from May onwards, when flour was given in substitution of part of the rice rations A canteen has been functioning where cereals, tinned meat and fish, dried fruits, tea, coffee, cocoa, jam and powdered milk could be obtained in limited quantities Although the extremely bad conditions which prevailed at first had been confirmed, it was clear that there had been a marked improvement since May, particularly as regards food and health The recent arrival of 1000 tons of supplies, including clothing, should result in a further improvement

Air Ambulances in the Middle East

In answer to a question Sir ARCHIBALD SINCLAIR stated that in the Middle East, as in other theatres of operations, the evacuation of wounded or sick by air from the battle areas is undertaken by the Royal Air Force Specially fitted transport aircraft are normally used for the purpose

Tuberculous Nurses

Mr J H WOOTTON-DAVIES asked the Minister of Health (1) whether, in view of suggestions that girls should be compelled to take up sanatorium nursing and of the effort now being made to increase the number of nurses in such sanatoria, he would investigate existing cases where nurses had contracted tuberculosis in the discharge of their duties and were now maintained either by public funds or on a sum which did not permit of adequate and proper care, and (2) what steps were taken by his department to ensure the rehabilitation of nurses who contracted tuberculosis when nursing tuberculous patients, and whether he was satisfied that sufficient financial provision was made for such a nurse to ensure adequate food and clothing and a room apart from the rest of the inmates of the house where she might be more or less segregated —Mr E BROWN replied I would in the first place call attention to the statement in the recent report of the Medical Research Council that evidence from research in other countries and expert opinion in our own suggest that the risk of contracting tuberculosis from nursing tuberculosis patients in sanatoria is no greater than that involved in general hospital nursing A nurse in a tuberculosis institution who contracts the disease is customarily given every care and attention appropriate to her condition by the institution Arrangements for care and after care, directed to restoring working capacity, are an essential part of the tuberculosis service and apply to nurses as much as to any other person who has suffered from tuberculosis

Vitamin-B_1 Content of the Wheat Berry

Sir ERNEST GRAHAM LITTLE asked the Parliamentary Secretary to the Ministry of Food whether his attention had been directed to the claim by his chief scientific adviser that the bulk of vitamin B_1 content of the wheat berry lay, not in the germ, but in the thin skin covering it, whether his suggestion that much of the germ could with advantage be eliminated from bread, indicated any departure from the policy that national wheatmeal should contain the maximum quantity of wheat germ which, having regard to the type of milling plant, could be included, and whether he would re affirm that specification —Mr W MABANE replied My attention has been drawn to the remarks made by the ministry's scientific adviser in his recent Harben lectures at the Royal Institute of Public Health which included reference to a recent discovery that a large proportion of the vitamin B_1 of wheat germ is contained in the scutellum which forms part of the structure of the germ itself There is no intention at present to modify the existing instructions to millers regarding the manufacture of national flour

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Messrs PHARMACEUTICAL SPECIALITIES (May & Baker) inform us that their product 'Thiazamide' and its sodium salt are now available for normal prescribing purposes Thiazamide is marketed in tablets of 0 5 g in containers of 25, 100 and 500, in bottles of 15 g of the powder, and in ampoules of the sodium salt (each containing the equivalent of 1 g sulphathiazole) in boxes of 6 and 25 ampoules

Obituary

SIR NORMAN WALKER

MD EDIN, LLD, FRCPE

Norman Purves Walker was born at Dysar
in 1862, the only son of the Rev Dr Norman I
for many years editor of the Free Church maga
went to school at the Edinburgh Academy and
his studies at the Universities of Edinburgh V
Prague After graduating in 1884 he spent five
general practice at Dalston, a southern su
Carlisle, and here he found a wife and as hon s
of the Carlisle Medical Society served his appren
in committee procedure In 1890 he returned t
burgh and the next few years were spent i
graduate study Dermatology had always a
him, for, as he was wont to emphasise, it had th
reached the stage of observation and collection
Inquiry into causes began with the discoveries
teriology and appreciation of what is meant by
crasy His motto was that of Job "The caus
knew not I searched out" In 1892 he was ap
assistant physician for diseases of the skin at th
Infirmary and from 1906 to 1924 he was full ph
In 1899 he published his lectures to students in t
of *An Introduction to Dermatology* which went t
nine editions in 33 years Its popularity wa
deserved—concise, comprehensive, and a little do
written in simple language with apt case-not
anecdotes and above all with ample help in treat

In 1906 Walker defeated William Bruce a
elected direct representative for Scotland on the
Medical Council, and here he found and grasped
his most important opportunity for public
"No one could truly judge Sir Norman Walker's
writes H L E, "who did not see his routine w
the General Medical Council from day to day an
to week, both as chairman of business for many
and for eight years as president His knowledge
affairs and traditions of the council was
He knew the minutes from end to end and cou
advice or a decision on any problem on the lines
Common Law of England, that is, on the accum
decisions of the past His retentive memory, his
tion to detail and his appreciation of the work d
him by the administrative staff were virtues
combined, are rare in those in authority His n
memoranda submitted to him were always clear
monsense and perspicuous, for his successors a n
wisdom and wise precedent On the personal s
earned the affection of his colleagues by his kindne
by the welcome he bestowed on every rather app
sive newcomer to the council In his judicial ca
as president, he had all the accumulated experience
distinguished predecessor Sir Donald MacA
imparted to the council with the velvet glove rathe
with the iron hand with which they had been rul
the previous twenty-seven years Moreover, only
who were intimately acquainted with both could
appreciate the self-denying care and assistance
Sir Norman rendered, both in business and in life
Donald MacAlister in his later years when his p
were beginning to fail In his own life he was
capped physically in later years by illness, but
theless he would not give in and his attention to du
to his ideals of conduct never flagged The medica
fession of the United Kingdom has lost a good fri
just judge and a devoted servant"

During the last war Sir Norman acted as conver
the Scottish Medical Service Emergency Committe
his knowledge of affairs served him well during his
as editor of the *Scottish Medical and Surgical Journa*
of the *Edinburgh Medical Journal* His work a
university and as a member of the committee of ma
ment of the Scottish Conjoint Board had given
insight into the problems of the curriculum, and in
he visited the United States and India to report o
state of medical education in those countries O
return in the following year he was knighted
1929 to 1931 he was president of the Royal Colle
Physicians of Edinburgh

Sir Norman, who died on Nov 7, at his hom
Balerno, was in his eighty-first year He married

CHEMISTRY AND PHYSICS OF ANTISEPTICS IN RELATION TO MODE OF ACTION*

ADRIEN ALBERT, PH D (MED) LOND, B SC SYDNEY
OMMONWEALTH RESEARCH FELLOW DEPARTMENT OF ORGANIC CHEMISTRY, UNIVERSITY OF SYDNEY

THE ideal antiseptic is one that will actively inhibit the growth of bacteria in the presence of body fluids without injuring the cells of the host In view of the many ommon functions and components in living cells, whether human or bacterial, the problems involved in producing differential action of this sort are not likely to be solved easily or by purely empirical methods It is therefore regrettable that more research has not been directed owards the discovery of fundamental laws correlating physico-chemical properties with antiseptic action, especially as the few systematic investigations undertaken in this field have given results that, when collected and classified, fit into a logical and promising sequence

In the belief that the time is ripe for submitting the search for better antiseptics to that " rational approach " visualised by Fildes (1940a), it has been thought useful to review what is known about the nature of the chemical and physical factors believed responsible for the activity of antiseptics Experimental difficulties make the interactions of antiseptics with tissue cells rather difficult to determine, but much more is known regarding the effects of antiseptics on bacteria

HYDROGEN AND HYDROXYL IONS AS ANTISEPTICS

A good deal of evidence has accumulated that chemical reactions of a very simple kind play an important part in the action of antiseptics One of the simplest of these reactions is neutralisation of the free basic or acidic groups of bacterial protein Such neutralisation of vital functional groups seems to cause metabolic disturbances in the organism and eventually its death

Pioneer work on this type of antisepsis was done by Krönig and Paul (1897), who showed that the antibacterial effects of various acids were proportional to the concentration of hydrogen ions that they yielded While there are indications that an efficient antisepsis could be achieved in any tissue by bringing it to pH 5, even this mild acidity is apt to irritate and injure the host The epithelial cells lining the urinary tract seem least disturbed by such hydrogen-ion antisepsis, usually achieved by the administration of ammonium chloride or sodium acid phosphate This practice has its rational origin in the work of Shohl and Janney (1917), who showed that urine more acid than pH 5 inhibited the growth of *Bacterium coli* and other pathogens A high degree of alkalinity is also inimical to bacterial growth, but again it is only in urinary infections that this hydroxyl-ion antisepsis has found safe employment

More and more evidence is coming to hand that many antiseptics which function in neutral solution do so by forming un-ionised compounds with vital chemical groups in the bacterium Such complexes to be harmful to bacteria, must not readily dissociate into their constituents, and this suggests why the property of high molecular weight, which favours the formation of insoluble or feebly ionised complexes, is so commonly found in useful antiseptics This type of antibacterial action was definitely established by Fildes (1940b), who showed that inorganic mercurials are antiseptic because they combine with the sulphydryl (-SH) groups of metabolites (such as cysteine) that are essential for bacterial nutrition It will be interesting to see whether antiseptic salts of other heavy metals will be found to act in this way

ANIONIC AND KATIONIC TYPES OF ANTISEPTICS

As far back as 1924, A E and E W Stearn were postulating the formation of un-ionised complexes between antiseptics and bacteria in order to explain the varying antiseptic activity met with in salts that had one ion of much greater molecular weight than the other The Stearns recognised two classes of such salt, for which the names anionic and kationic antiseptics are now proposed

The *anionic antiseptics* are the neutral or faintly alkaline sodium (&c) salts of acids of high molecular weight, familiar examples being common soap, ammonium and calcium mandelates and a class of neutral, coloured substances known as " acid dyes " (e g , acid fuchsin) Stearn and Stearn (1924), who worked mainly with dyes, assumed that the coloured anionic antiseptics function through interaction of their acidic ions with the basic groups of bacteria to form feebly ionised compounds This conception could be further investigated and extended to the colourless members of the class, while the basic groups in question may be traceable to some particular bacterial enzyme system The postulated reaction, analogous to an ordinary double decomposition that results in precipitation, may be represented

$$P-NH_2 + Na^+A^- + H_2O \rightleftharpoons P-NH_3A + Na^+OH^-$$

where P stands for the main body of the protein, &c , and A stands for the anion of high molecular weight

Such a reaction is unlikely to take place to any extent in the absence of acid, and hence this form of antisepsis should be effective only at a pH value more acid than that of blood This is confirmed in practice, since anionic antiseptics have been found useless in infected wounds, moderately useful in skin sterilisation and very useful in the disinfection of the urinary tract, provided this is maintained sufficiently acid and the substances (e g , mandelates) are excreted unchanged

The improved action of certain of the above antiseptics in the presence of acid has sometimes been given a different interpretation—that the undissociated acid is more " active " than the ion This alternative theory would lose ground if it were found that increasing the acidic nature of the anions (in a related series of antiseptics) raises their antibacterial powers, as the converse behaviour of kationic antiseptics (see below) renders likely There are indications that the antiseptic activity of phenols is of the anionic type, but it seems preferable to deal with them after the discussion on surface-activity

The *kationic antiseptics*, which are the converse of the previous group, have found a much wider field of usefulness They consist of the neutral salts (hydrochlorides, &c) of bases of high molecular weight, and include all so-called " basic dyes " such as the polyphenylmethane antiseptics (brilliant green, auramine, crystal violet) and the acridine antiseptics (proflavine acriflavine 'Rivanol ') as well as the colourless higher aliphatic amines ('Zephiran,' 'Ctab' 'Quartamon ') Possibly certain organic mercurials of the type of phenyl mercuric nitrate also belong here since they possess kations of high molecular weight and do not readily liberate inorganic mercuric ions

Stearn and Stearn (1924) assumed that kationic antiseptics owe their activity to their basic ions, which they supposed interact with acidic groups in bacteria to form feebly ionised compounds (as in a precipitation reaction) thus

$$P-COOH + B^+Cl^- \rightleftharpoons P-COOB + H^+Cl^-$$

where P stands for the main body of the protein, &c , and B stands for the kation of high molecular weight

It might appear that this reaction would take place no more readily than the previous one, but certain factors favour it In the first place, bacteria contain an excess of acidic groups over basic groups, as is shown by their low isoelectric points Secondly, quite apart from -COOH groups, more strongly acid groups (phosphoric) are to be expected in the nuclear apparatus and enzyme systems of the organism This contention is supported by some recent work by McIlwain (1941), who finds that acriflavine inhibits bacteria partly through interaction with nucleotides

While the kationic antiseptics as a class have furnished some valuable agents for the prevention and treatment of sepsis in wounds and in the disinfection of skin and surgical instruments, individually they vary greatly in activity Three questions arise here · Why are some " kationic " substances not antiseptic , why are some kationic antiseptics comparatively ineffective against gram-negative organisms ; why are some members of this class (e g zephiran) rapidly bactericidal whereas most members are bacteriostatic with only a gentle disinfectant action ? These are stimulating questions and the collaboration of chemist and bacteriologist should answer them in the near future Meanwhile there are some highly significant clues

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* Based on a lecture given to the Victorian Society of Pathology and Experimental Medicine in October, 1941

University of London

Sir Ernest Graham-Little has been reappointed chairman of the external council of the university for 1942–43

Medical Society of London

At a meeting of this society at 11, Chandos Street, W 1, on Monday, Nov 23, at 4 PM, Lieut Colonel E G Muir and Lieut -Colonel A E Porritt will open a discussion on surgery in the Middle East

Chadwick Lecture

Sir Arthur MacNalty will deliver the Malcolm Morris lecture on Tuesday, Nov 24, at 2 30 PM, at the Westminster Hospital medical school, Horseferry Road, S W 1 He will speak on the prevention of tuberculosis in peace and war

Royal Faculty of Physicians and Surgeons of Glasgow

Prof H J Seddon will deliver a John Burns lecture in the hall of the faculty, 242, St Vincent Street, Glasgow, on Wednesday, Nov 25, at 4 PM He has chosen as his subject recent work on peripheral nerve injuries

Medical Casualties

The following RAMC officers have been posted as prisoners of war

WS/Captain Harold Bloom, MRCS WS/Captain W E G Bradford MB LPOOL, Lieut Colonel W B F Brennan, MB BELF Captain L B Gunn, MB LOND, Captain P L Headon, MB NUI, and Captain L V Macdonald, MD ALBERTA

Bundles for Britain

London voluntary hospitals have received £93,442 and thousands of pounds worth of equipment from Bundles for Britain These American neighbours have now sent to this country over £170,000 in money, 17,000 cases of equipment, 25 ambulances, 120 mobile canteens and 185 blood transfusion sets

A Gift for Russia

The employees of Messrs George Gill and Sons (Sheffield) Ltd, in their own time are replacing 500 Spencer Wells forceps given to Mrs Churchill's fund and lost by enemy action

Royal Society Medallists

The King has approved the recommendation made by the council of this society to award a royal medal to Dr W W C Topley for his work on experimental epidemiology and immunology The Copley medal has also been awarded to Sir Robert Robinson, DSc, for his research work "which has influenced the whole field of organic chemistry", and the Buchanan medal to Sir Wilson Jameson for his administrative service to hygienic science and practice

British Standards Institution

This institution has been recognised by the Government as the body for the issue of national standards with the exception of those governed by the Therapeutic Substances Act and issued under the authority of the Medical Research Council and those contained in the British Pharmacopœia and the British Pharmaceutical Codex During the last twelve months the institution has published 160 new and revised standards, bringing the total issued to 1300

Presentation to Sir Alexander Macgregor

On Nov 7 the staff of Glasgow public health department met to present their chief with his portrait, painted by Mr W O Hutchison, ARSA The presentation was made by Colonel William Gunn, senior assistant MOH, and Lady Macgregor also received a gift of war bonds from Dr Nora Wattie, senior child welfare officer In thanking his colleagues Sir Alexander said he had tried to avoid over organising an administration that touched so closely the lives of the people He had never enjoyed leading strings himself The gathering was presided over by Dr R J Peters, deputy MOH

Flats for Disabled Ex-Servicemen

Since 1918 the Sir Oswald Stoll Foundation has run a block of residential flats at Fulham where disabled ex Service men may live at a nominal rental with their families while receiving the after care and special treatment they need Dr Lionel Bailey is the visiting medical officer and there is a residential nursing staff The foundation has secured the use of a country house rent free where some of the paralysed and helpless men have been evacuated Medical and nursing services are also provided there This war will increase the responsibilities of the foundation, and in their report for 1941 the council appeal for help in their work

CORRIGENDUM —In the article by T L Lawson (Oct 24, p 480) the chemical name of 'Pentamidine' should read 4 4'-diamidinodiphenoxypentane

Infectious Disease in England and Wales

WEEK ENDED NOV 7

Notifications —The following cases of infectious were notified during the week scarlet fever, whooping-cough, 965, diphtheria, 881, paratyp 6, typhoid, 6, measles (excluding rubella), 7384, pneumonia (primary or influenzal), 543, puerperal pyrexia, 140, cerebrospinal fever, 65, poliomyelitis, 18, polio-encephalitis, 1, encephalitis lethargica, 2, dysentery, 142, ophthalmia neonatorum, 76 *No case* of smallpox, cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Nov 4 was 1734, including scarlet fever, 636, diphtheria, 251, measles, 197, whooping cough, 156, enteritis, 74 chicken pox 48, erysipelas 35 mumps, 22 poliomyelitis, 6, dysentery, 36, cerebrospinal fever 1, puerperal sepsis, 9, enteric fever, 3

Deaths —*In 126 great towns there were no deaths f* scarlet fever, 2 (0) from enteric fevers, 10 (0) from measles, 7 (1) from whooping-cough, 16 (1) from diphtheria, 56 (4) from diarrhœa and enteritis under two years, and 19 (3) from influenza The figures in *parentheses are those for London itself*

Thurrock and Preston each reports a fatal case of an enteric feve Sunderland had 3 deaths *from diphtheria Leeds, Liverpool* and West Bromwich each had 4 fatal cases of diarrhœa

The number of stillbirths notified during the week was 202 (corresponding to a rate of 35 per thousand total births) including 23 in London

SMALLPOX IN SCOTLAND

By Nov 11 sixteen cases of smallpox had been reported in the Lothians One middle-aged man has died from the disease at Tranent The outbreak has so far been confined to patients who have had direct connexion with the Edinburgh Royal Infirmary, or its convalescent home The infirmary has announced that outpatients will not be treated unless they have been vaccinated recently, and inpatients must have been vaccinated within the last six months Emergency cases will be admitted as usual but will be vaccinated as soon after admission as their condition allows

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

Appointments

BECK, DIANA KINLOCH, MB LOND, FRCS neurosurgeon to the Royal Free Hospital, London
BERRY, N W, MRCS examining factory surgeon for Gosport, Hants
COCKSHUT, R W MB LPOOL examining factory surgeon for Hendon, Middlesex
PENTREATH, E U H MB LOND, DPM medical superintendent of the Mickleover County Hospital, Derbyshire

Colonial Medical Service —The following appointments are announced —

FLEMING, A McK., MB LOND, DTM&H MO at Kenya,
RAINSFORD O R C, MD BELF, DTM senior MO at Seychelles,
RUSHTON, E P K, MB BIRM MO at Sierra Leone

Births, Marriages and Deaths

BIRTHS

DICK —On Nov 7, at Bristol, to Dr Kathleen Dick (*née* Bates) and Major Cecil Dick RASC—a son

GORDON —On Nov 8 at Ipswich the wife of Lieutenant C J Gordon, FRCS RAMC—a daughter

HESKETH —On Nov 10, at Hitchin, the wife of Dr J S Hesketh—a daughter

HUGO —On Nov 11, at Guildford, the wife of Lieutenant Richard Hugo RAMC—a daughter

NORTH —On Nov 11, at Southport the wife of Surgeon Lieutenant John North, RNVR—a daughter

PARKES —On Nov 5, the wife of Lieutenant P W Parkes, RAMC, Bale Hall, Tamworth—a daughter

RODNEY SMITH —On Nov 10 in London, the wife of Mr Rodney Smith, FRCS, RAMC—a son

MARRIAGES

HANDLEY—GRAY —On Nov 12, at St Peter s, Vere Street, Richard Sampson Handley, FRCS, major RAMC, to Joan Gray, of Newcastle on Tyne

DEATHS

CHAPMAN —On Nov 10, at Bicester, Oxon, Herbert Frederick Chapman, MRCS formerly of Richmond, Surrey, aged 89

DAGGETT —On Nov 7 at Kirby Hill Boroughbridge, Henry Ingledew Daggett MB CAMB, aged 78

FLETT —On Nov 13 Alexander Flett, MD ABERD, DMRE, of The Avenue Bedford Park W 4

WORTHINGTON —On Nov 14, Helen Worthington BA Cincinnati, LRCPE

If we dare accept this suggestion that surface-activity s the *property* that converts a bacteriostatic into a actericidal agent, we shall need to know what chemical structure is responsible for this property and how it exerts its effects, desirable and undesirable

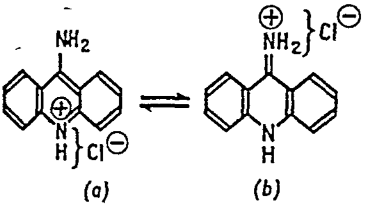
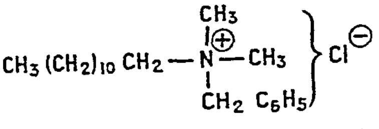


Fig 4—The two resonant forms of 5-amino-acridine hydrochloride (a) being derived from the amine and (b) from the isomeric imine

The property of surface-activity—that of congregating at a boundary—is due to a peculiar two-endedness of a molecule which must bear a powerful "polar-group" or "head-group" such as -COOH or $-NH_2$ at one end of its long axis while the rest of the molecule constitutes the "non-polar-group" or "tail-group" Such a tail-group is simply made up of carbon and hydrogens or halogens, and the longer and heavier it is the greater the surface-activity will be In essence this property is due to the "tails" being repelled by water while the head-groups cause the substance still to remain nominally in solution A slight variant of this type is provided by xanthates and similar sulphur compounds where the head-groups are attracted not by water but by certain solid surfaces



$$\left.CH_3(CH_2)_{10}CH_2-\overset{\displaystyle CH_3}{\overset{|\oplus}{\underset{\underset{\displaystyle CH_2C_6H_5}{|}}{N}}}-CH_3\right\}Cl^{\ominus}$$

Fig 5—Laurylbenzyldimethylammonium chloride (in Zephiran)

According to Rideal (1930) and Rideal and Schulman (1939), surface-active substances, whether foods or drugs, are attracted to the living cell and become orientated under or in it In general the "tails" of the foreign substances are anchored by the "tails" of the living membranes and in many cases the respective "head" groups are brought close together This mechanism could cause to concentrate, on or in the cell, substances essential to its metabolism or inimical to its very existence

As long ago as 1914, Berczeller noted that the phenols, an important class of disinfectants, were surface-active, the most antibacterial members proving the most surface-active It is regrettable that this correlation has not been sufficiently substantiated by test on a large number of phenols, but the results of Frobisher (1927) quoted in table II are highly suggestive Inspection of the formulæ of some 240 phenols, whose disinfectant powers are classified by Suter (1941), lends even more support to this hypothesis that bactericidal properties increase in proportion as the molecule assumes a definite "head and tail" arrangement

TABLE I—CORRELATION OF BACTERIOSTASIS AND BASIC STRENGTH AMONG AMINO ACRIDINES

Substance	Medium 10% serum-broth (pH 7 2)					Bacteriostatic index (sum of inhibitory dilutions)	Dissociation constant at 25° C $(\times 10^{-7})$
	Cl welchii	*Strep hæm A*	*Staph aureus*	*B coli*	*Proteus vulgaris*		
5-Aminoacridine	7*	6	3	3	4	23	300
2 8 Diaminoacridine (proflavine)	7	6	3	3	2	21	120
2 Aminoacridine	7	4	3	4	3	21	12
4 Aminoacridine	5	2	1	1	0	9	0 03
3 Aminoacridine	5	2	1	0	0	8	0 01
Acridine	3	1	1	0	1	6	0 002
1-Aminoacridine	2	1	1	0	0	4	0 001

* *Key to dilutions* 1 = 1 g antiseptic prevents growth in 5000 c cm of medium Similarly 2 = 1 in 10 000, 3 = 1 in 20 000 4 = 1 in 40,000, up to 7 = 1 in 320,000 0 signifies no inhibition at 1 in 5000

PHENOLS

The slight surface-activity of phenol itself can be greatly increased by inserting a hydrocarbon "tail" (as in 'Cyllin,' 'Izal,' and to a much smaller extent in cresol), or a combination of halogen and hydrocarbon "tails" (as in chloroxylenol, an active ingredient of 'Dettol') Table II further shows how the introduction of an alkyl group raises the bactericidal activity of a phenol until the chain exceeds five carbon atoms, when a drop in activity towards gram-negative bacteria (alone) begins

TABLE II—CORRELATION OF DISINFECTION AND SURFACE-ACTIVITY AMONG PHENOLS

Substance	Phenol coefficient		Surface tension of a 0 01% aqueous solution (dynes per cm)
	Staph aureus	*B typhosus*	
Resorcinol	0 3	0 3	76
4 Propyl resorcinol	3 7	5 0	73
4-Butyl resorcinol	10	22	66
4-Amyl resorcinol	30	33	60
4-Hexyl resorcinol	98	50	54
4 Heptyl resorcinol	280	30	43
4-Nonyl resorcinol	960	0	Not recorded

The surface-activity of phenols cannot in itself be responsible for their antibacterial action, so that evidence should be sought for an interaction between the -OH of the phenol and some characteristic group on the bacterial membranes It is true that this hydroxy group would not normally be classed as highly reactive, but Rideal has pointed out that reactions occurring with some difficulty in the bulk phase can take place with ease when the reactants are orientated in a surface-layer Even in 1934, Labes had found some evidence that phenols exert their disinfectant action through combination with the amino groups in bacteria, and he subsequently showed that even in the test-tube a phenol could precipitate an amine provided one reactant was of sufficiently high molecular weight or carried a lipophilic substituent If this is true, phenols are anionic antiseptics and it is not surprising that they have been found to act best in acid media Their own acidity is quite slight ($k_{acid} = 10^{-10}$), and, as Boyd (1915) showed, it is identical for all the common phenols It would be worth while examining phenols with enhanced and diminished acidity in order to correlate physical and biological properties more completely in this important series

The omega phenyl-aliphatic acids (from phenyl-acetic to phenyl-caproic) were capably investigated in 1931 by Daniels and Lyons They found that these substances were some 10,000 times more acidic than phenol and much more strongly disinfectant too, the disinfectant action increasing with the surface-activity which rose as the series was ascended

There are aspects of surface-activity which do not make it so desirable a feature in an antiseptic as may appear from the foregoing Since surface-active disinfectants act at great dilution in vitro, there is a danger that they are used in wounds at a low concentration that takes no account of their wastage through adsorption on the surface of pus cells, tissue debris and the like Protein in any form seems always to reduce the activity of surface-active substances and they seem always to be injurious to delicate human tissues

OTHER CHEMICAL MECHANISMS

The discussion of chemical action between antiseptics and bacteria has been confined so far to one type of reaction, neutralisation There are, however, other well-known types although these do not seem to be so suitable for further development

Formaldehyde appears to act by forming complexes involving the free amino groups of protein, but no other aldehyde has comparable antiseptic properties The halogenating agents, iodine, eusol and organic compounds liberating hypochlorous acid appear to act both by halogenating free amino groups and through a direct oxidising action There is also the group of frank oxidis-

As regards the first question, it seems that some kationic substances are not antiseptic because the strength of the free base is unsuitable The Stearns' hypothesis—“For any closely related series of dyes or other basic substances, the bacteriostatic power should increase with the basic strength”—was based on two premises First, that the ionisation of antiseptics would increase in proportion as the bases, of which they are the salts, became stronger and that this would increase the extent of interaction with bacteria, secondly, antiseptics derived from strong bases would form complexes with protein, &c most resistant to hydrolysis (Stearn and Stearn 1924) However, these workers also foresaw that it would be disadvantageous to work with the salts of too strong a base since these may not so easily produce un-ionised complexes

TRIPHENYLMETHANE DYES AS EXAMPLES OF THE KATIONIC TYPE

The Stearns sought confirmation of this hypothesis in the triphenylmethane series where basic properties were surmised to increase in the following order aniline blue, magenta, crystal violet (the so-called “gentian violet”), malachite green and brilliant green This is also the order of their activity as antiseptics Unhappily for this correlation, the basic strengths were not measured but were estimated from principles such as, “That the methylation of amines greatly increases their basicity” Since even aniline is now known to form an exception to this generalisation, it seems necessary to learn the basicities from actual physical measurement Unfortunately, the triphenylmethane dyes offer exceptional difficulties to the physical chemist in so far as the free bases are tautomeric and contain unknown amounts of colourless carbinols which are only feebly basic This state of affairs is illustrated in fig 1a and b Hence, in spite of previous work, this series would still repay investigation starting, perhaps, with compounds such as c (fig 1), where the addition of an inert *ortho* substituent counters the tendency to hydrol formation

The second question, why some kationic antiseptics are ineffective against gram-negative bacteria, may partly be answerable in terms of basicity Although all pathogenic bacteria are predominantly acidic, there is a notably different distribution of this quality among the common species At one extreme are gram-positive organisms such as staphylococci that have a high ratio of acidic to basic groups, while at the other extreme are the gram-negative types such as *Bact coli* Intermediate types are known and the two classes of bacteria actually merge imperceptibly into one another

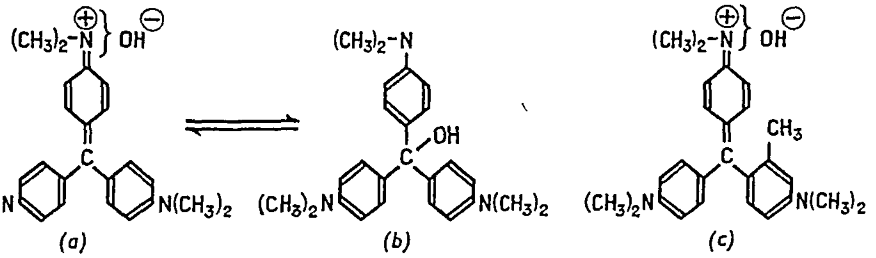


Fig 1—(a) Crystal violet (active base coloured) (b) Crystal violet (colourless carbinol) (c) Homologue of crystal violet The inert *ortho* substituent hinders carbinol formation

“There seems to be no essential difference between the mechanism of dyes as stains and as bacteriostatic agents,” wrote Stearn (1933), who interpreted the property of gram-positiveness as an avidity equally for *kationic microscopical stains and for other kations of* high molecular weight, gram-negativeness indicating a lowered affinity for both There seems to be an indication here that the high basicity requisite for antiseptic action is of *increased* importance in dealing with gram-negative bacteria

ACRIDINE DYES AS EXAMPLES OF THE KATIONIC TYPE

Since the best-known members of the acridine (fig 2) series (proflavine, acriflavine) show a high degree of toxicity to both gram-positive and gram-negative organisms and readily lend themselves to potentiometric titration, this has always seemed to me to be the group of kationic antiseptics most deserving of investigation from this angle Accordingly the antiseptic and basic acridine and all the mono-aminoacridines were c with proflavine (Albert, Rubbo and Goldacre Albert, Goldacre and Rubbo 1941) The results given in table I, where the relative basicities are as dissociation constants

Passing from the weakest base (1-aminoacridine) the strongest (5-aminoacridine) the antiseptic powers this series will be seen to increase in good accord with the Stearns' hypothesis Moreover, only the stronger bases are active against gram-negative organisms These measurements are being extended to a large group of acridine derivatives and the varying activities of the 50 substances so far examined are consistent with these two generalisations.

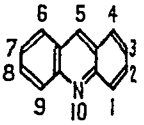


Fig 2—Acridine

It will be noticed in table I that while 1-, 3- and 4-aminoacridines are bases of about the same strength as acridine and aniline, 2- and 5-aminoacridines are some thousand times as strong This striking difference is readily explainable in terms of the theory of resonance. Resonance may be briefly defined as a low energy condition facilitated by certain structural peculiarities in a molecule and profoundly altering the reactivity of the latter in a way that is essentially predictable (see Sidgwick 1937) The structural peculiarities in the present case are tautomeric imine forms that can arise only when the amino group is in the 2- or the 5- position These imines, while unimportant in themselves, give rise to ions (figs 3b and 4b) that resonate with ions derived from the normal forms (figs 3a and 4a) This arrangement stabilises the ion relative to the base, making the latter strong

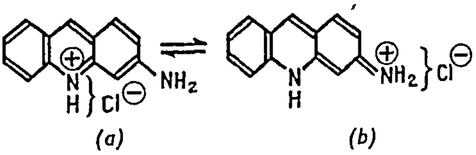


Fig 3—(a) The two resonant forms of 2 aminoacridine hydrochloride, (a) being derived from the amine and (b) from the isomeric imine

A similar arrangement is present in the *coloured* forms of the triphenylmethane dyes and it may safely be predicted that a vast number of new antiseptics will be found among such amines of high molecular weight as have highly resonant ions

The Stearns' prediction, that a very high degree of basicity will not necessarily be advantageous, is borne out in the acridine series, where the supremely high basicity of acriflavine and other quaternary compounds (equal to that of sodium hydroxide) has produced nothing superior to proflavine, which is no stronger than ammonia

LONG-CHAIN POLAR COMPOUNDS

In 1935, Domagk, who had just launched ‘Prontosil,’ discovered a new class of kationic antiseptics—quaternary aliphatic amines with a long lipophilic side chain as exemplified by fig 5, which shows the principal constituent of zephiran

It remained to Baker, Harrison and Miller (1941) to show that a wide variety of aliphatic amines have properties identical with this substance provided they are *furnished with a* side-chain from 12 to 16 carbon atoms in length Even primary amines showed high activity—e g, the lauryl ester of glycine These amines differ from acridine compounds in two ways their rate of kill is far more rapid but unfortunately they are much more sensitive to protein No explanation has been offered for this difference, which formed the subject of the third question May it not be a matter of surface activity? For, while the acridine compounds of table I have a compact structure and do not appreciably affect surface tension, zephiran, because of its “head and tail” structure, powerfully lowers the surface tension of water (from 75 to 39 dynes per cm at a dilution of 1 in 10,000)

TABLE I—DYSPEPTIC PATIENTS ADMITTED TO A ROYAL NAVAL HOSPITAL

Year	Quarter	Total	Dyspeptics		Ulcers*	
			Total	% of all cases	Total	% of dyspeptics
1939	4th	628	58	9 2	36	62
1940	1st	1078	91	8 5	50	55
,,	2nd	1707	142	8 3	73	51
,,	3rd	1144	104	9 0	63	60
	4th	1648	148	8 9	97	65
1941	1st	2066	205	9 9	114	56
,,	2nd	1695	170	10	91	53
,,	3rd	1598	145	9 0	73	50
Total		11,564	1063	9 0	597	56

* These figures include gastric and duodenal dyspepsia types 2 and 3 (clinical ulcers) If these are excluded, the figures are total ulcers, 471 (44 3%)

and barium-meal investigations were not, for various reasons, done in every case

For present purposes, war-time Naval personnel may be divided into two main groups : (1) active service Royal Navy ; (2) reserves and "hostilities only" (HO) personnel, some of whom are Merchant Service personnel taken over by the Admiralty Group 1 contained 217 cases and group 2, 786 cases, a ratio of 1 to 3 7.

In the following classification the term "operation" refers to all gastroduodenal operations other than those done for perforation.

Peptic ulcer gastric ulcer 67; duodenal ulcer 404, anastomotic ulcer 5 cases

Gastric carcinoma primary 0, ulcer-cancer 2 cases

All cases in these two classes were confirmed by radiological examination or at operation in this hospital, and the barium-meal investigations were conducted by one radiologist. Gastroscopy was performed in a few cases Cases of hæmatemesis or melæna are not included unless subsequently confirmed by X rays or operation

TABLE II—DIAGNOSIS AND PREDISPOSING FACTORS IN DYSPEPSIA CASES

—	Cases	% of total dyspeptics	Predisposing factors					
			A	B	C	D	E	F
Gastric ulcer	67	6 7*	5	23		4	1	
Duodenal ulcer	404	40*	35	82	5	9	37	
Anastomotic ulcer	5	0 5	-			-		
Gastric dyspepsia	30	3 0	1	5	1		1	1
Duodenal dyspepsia	148	15	10	28	1	6	9	1
Nervous dyspepsia	76	7 5	76	2	.	1	6	1
Reflex dyspepsia	14	1 3	-	-	-	-	-	
Dyspepsia of uncertain origin	221	24	1	84		11	9	5

A = psychological factors, B = food and diet C = alcoholic excess D = teeth, E = family history F = seasickness

* Excluding gastric and duodenal dyspepsia types 2 and 3 If these are included the figure for gastric ulcer becomes 9 3% and for duodenal ulcer 50%

Duodenal dyspepsia in which a clinical history suggesting duodenal ulcer was not confirmed radiologically during the present illness, 148 cases

Cases of duodenal and gastric dyspepsia (see below) can be further classified into three types as follows

1 No previous perforation, operation, hæmatemesis, melæna or positive radiogram, 48 cases

2 Definite previous operation for ulcer, perforation, hæmatemesis, melæna or positive radiogram, 66 cases

3 Radiological findings suggestive of ulcer or revealing healed ulceration, 34 cases Seven cases classed under type 2 showed type 3 characteristics, these are included under type 2 only.

Gastric dyspepsia, in which a clinical history suggestive of gastric ulcer was not confirmed radiologically during the present illness, 30 cases These can be classed like the duodenal cases as type 1, 4 cases type 2, 16, type 3, 10

It may be suggested that clinical distinction between gastric and duodenal dyspepsia is practically impossible, but the 4 cases classed as type 1 were considered to be typical of gastric dyspepsia in that there was much vomiting, fasting to relieve pain, aggravation of pain by food and considerable loss of weight From all clinical points of view the duodenal and gastric dyspepsias types 2 and 3 were cases of peptic ulceration and would have been included as such in a clinical survey. They were considered not proven from the statistical point of view and are not included among the confirmed ulcers. The effect of their incorporation in the respective ulcer groups is shown in tables I and II Radiological evidence of ulcer is defined as actual demonstration of an ulcer crater

Nervous dyspepsia, 76 cases Symptoms of dyspepsia associated with psychological abnormalities without clinical or other evidence of organic disease of the gastro-intestinal tract Most patients in this group were examined by a specialist in neuropsychiatry

Reflex dyspepsia, 14 cases Symptoms associated with definite and well recognised extragastroduodenal disease and cured by appropriate treatment Chronic appendicitis 8, chronic cholecystitis 1, chronic constipation 4, pulmonary tuberculosis 1

Achlorhydric dyspepsia, 4 cases

Hyperchlorhydric dyspepsia, 1 case

Fat dyspepsia, 1 case Fat intolerance without evidence of gall bladder dysfunction

TABLE III—AGE AT ONSET OF SYMPTOMS (YEARS)

—	Total cases	15 and under	16–20	21–25	26–30	31–35	36–40	41–45	46–50	Over 50	Uncertain
Gastric ulcer	67	3	5	5	21	14	6	4	4	0	5
Duodenal ,,	404	17	69	101	65	52	44	16	6	6	28
Dyspepsia—											
Gastric	30	0	4	8	8	4	2	3	0	0	1
Duodenal	148	4	23	36	27	28	11	10	1	0	8
Nervous	76	1	8	13	21	10	14	4	1	1	3
Of uncertain origin	221	4	34	58	47	36	18	8	4	4	8
Alcoholic gastritis	17	0	0	3	3	3	5	3	0	0	0

Dyspepsia after partial gastrectomy for peptic ulcer, 3 cases.

Dyspepsia of uncertain origin, 221 cases This is a heterogenous collection of cases which do not conform to the characteristics of the other groups, and includes cases of so called "gastritis" with the exception of the alcoholic variety There was no evidence of ulceration in those who were radiologically examined, but some of them were probably dyspeptics with an organic lesion and should be included in the peptic ulcer group In 102 cases the symptoms were present for the first time and had begun since taking up service in the Royal Navy ; 82 of these were new entries and their symptoms had come on within a few months of active service life, the other 20 were regulars whose symptoms had started since the outbreak of war A well defined causative factor was present in 115 cases, 84 were due to alteration of diet, 11 to dental insufficiency and sepsis, 15 appeared to be sequelæ of gastroenteritis or acute tonsillitis and only 5 were attributed to seasickness Copious vomiting was a feature of 17 cases, with an excess of mucus in the vomitus Vomiting in greater or less degree is a definite characteristic of this group Gastroscopy in 7 cases showed normal appearances in 4, atrophic gastritis in 1, and hypertrophic gastritis in 2

Alcoholic gastritis, 17 cases

TABLE IV—DURATION OF SYMPTOMS

—	Total cases	Since war service	Years				
			3–5	6–10	11–15	16–20	21–25
Gastric ulcer	67	23 (33%)	15	16	3	5	0
Duodenal ulcer	404	52 (12%)	126	94	62	9	10
Gastric dyspepsia	30	6 (20%)	8	11	3	0	0
Duodenal dyspepsia	148	28 (20%)	55	36	17	5	1
Nervous dyspepsia	76	37 (49%)	23	12	0	0	0
Dyspepsia of uncertain origin	221	102 (47%)	48	35	18	3	6

Miscellaneous conditions aerophagy, 1, symptomless hæmatemesis, 1, duodenal ileus without characteristic symptoms 4, duodenal diverticula and long looped first part of duodenum with a mesentery were each seen in 4 cases but there was no evidence to attribute their symptoms to these conditions.

ANALYSIS

Each of the main groups has been analysed under the following headings category of service, age at onset of ing agents, ozone, hydrogen peroxide and permanganates All these substances are rapidly inactivated by protein of any kind and do not distinguish between bacteria and human tissues They sometimes effect instantaneous sterilisation, but when required to act over a long period must be constantly renewed The ingenuity with which this requirement has been met is exemplified in the Carrel-Dakin method of irrigation with hypochlorous acid and in the practice of giving hexamine when formaldehyde is required in the urinary tract

A more subtle type of oxidising effect was suggested by Dubos (1929) as underlying the antiseptic action of triphenylmethane dyes He credited crystal violet with maintaining the redox potential of the bacterial environment above a figure (+ 0 3 volt for aerobes) compatible with any of their metabolic activities Stearn (1930) criticised this view on the ground that crystal violet could hardly act as an oxidising agent at its extreme bacteriostatic dilution of one part in ten million, although, since there would be a hundred molecules of dye for each -COOH group present in the streptococci in his experiments, his acid-base hypothesis still held Later, Ingraham (1933) tried to reconcile these conflicting views by advancing a hypothesis that part of the action of crystal violet was due to its poising the bacterial environment at an E_H value too high for some phases of bacterial development Similarly, several attempts have been made to explain the action of sulphanilamide on a basis of redox interference, notably by Shinn, Main and Mellon (1939) and Burton, McLeod, McLeod and Mayr-Harting (1940)

While quinones as a class are both redox-active and antiseptic, and one quinone (citrinin) has been found to be the active antiseptic in a species of penicillium (Raistrick and Smith 1941), there is as yet no conclusive evidence of the extent to which antibacterial action can be attributed to interference with optimal E_H values

The most important group of antibacterial substances, the sulphonamides, lack general antiseptic activity. Their mode of action has been brilliantly illuminated by Fildes (1940a), who postulated that sulphanilamide exerts its action by displacing an essential metabolite, apparently *p*-aminobenzoic acid, from a bacterial enzyme, and this theory received further support when Rubbo and Gillespie (1940) showed that *p*-aminobenzoic acid was a growth factor for at least one bacterium More recently it has been shown (Albert and Goldacre 1942) that sulphanilamide has a basic strength ($k_B = 10^{-12}$) identical with that of *p*-aminobenzoic acid, and it may well be that this feeble basicity is significant in effecting similar chemical changes in both substances either before or after they enter the enzyme system

However this may be, sulphonamides represent a milestone in our progress towards ideal antisepsis since they make a refined and specialised chemical attack on a specific functional unit of the bacterium, as contrasted with the more generalised chemical activity of types described previously

SUMMARY

The nature of the physical and chemical factors believed responsible for the activity of antiseptics is reviewed Particular significance is attached to chemical activity of a very simple kind such as neutralisation and ionic exchange reactions The names anionic and kationic antiseptics are introduced to distinguish two important types of ionic exchange agents The discovery of many new antiseptics is predicted from considerations of modern theories of resonance

The possibility is advanced that high surface-activity is a property that promotes germicidal activity in disinfectants and is lacking in bacteriostatic agents

Some gaps in existing knowledge are indicated, the possibility of readily filling these by the collaboration of physical chemist, organic chemist and bacteriologist is suggested by what they have already accomplished

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DYSPEPSIA IN THE ROYAL NAVY

STUDY OF 1003 CONSECUTIVE CASES

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THIS review of cases of dyspepsia seen at a large N auxiliary hospital covers a period from October, 1939, to the end of September, 1941, during which 1063 (9% of the 11,564 admissions were diagnosed as dyspept The Army and the RAF contributed 60 dyspeptics to this series, for the purpose of this review they have been excluded, leaving a total of 1003 naval dyspeptics for consideration

During the first year of the war, as the number of admissions to hospital increased (table I) it became clear that the problem of the dyspeptic sailor was difficult. This applied particularly to those with a long-standing history of peptic ulceration, many of whom were discharged to duty after a long course of treatment and with advice as to subsequent dietary control It has now become evident that, in the vast majority of cases, expectations of relief of symptoms have not been realised

At a meeting of representatives of the medical sections of the various Naval hospitals held in the medical department of the Admiralty in March, 1941, it was recommended that cases of proved active ulceration and those with recurrence of symptoms, in the absence of radiological confirmation but with a definite past history of gastroduodenal operation, perforation or hæmatemesis, were to be invalided from the Service. Exceptions were officers and specialist ratings (key men) who could be usefully employed ashore in instructional or other duties under circumstances permitting adequate dietary control Such exceptions were each to be judged on their merits For the past 9 months these recommendations have been adhered to; a larger number of cases have therefore been invalided out of the Service in that time, but not because of any increase in the incidence of the disease There remain those complaining of dyspeptic symptoms for the first time, these are fully investigated and treated If the clinical findings are inconclusive and no definite removable predisposing factors exist, they are returned to duty for a trial period When there are definite predisposing factors, such as unsuitable food, gross dental sepsis or ill-fitting dentures, these are dealt with and the case again reviewed as to fitness for further service Should return to hospital be necessary and further investigation prove the presence of an ulcer, these patients are invalided Key men are discharged to shore service or invalided

Table I shows that the highest percentages of ulcer cases were admitted in the last quarter of 1939 and the last two quarters of 1940 (62%, 60% and 65%) These higher figures are due to new entries who suffered from peptic ulcer in civilian life and relapsed after a short period of active service Otherwise the incidence of ulcer cases among the dyspeptics admitted is remarkably constant (average about 55%)

CASES CLASSIFIED

In each of the 1003 cases all information likely to be helpful was carefully noted Fractional gastric analyses

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magnified and new ones appear, it is natural to expect therefore that dyspepsia would increase. No confirmatory evidence of this can be found in the present work.

This review emphasises that the outstanding features of duodenal as compared with gastric ulcer are the earlier age of onset, the earlier onset of complications, the commoner family history of ulcer, and the greater incidence of psychological factors. Among patients under 20 there were 10 perforations and 7 instances of hæmatemesis in those with duodenal ulcers as compared with 3 perforations and 1 hæmatemesis in those with gastric ulcer.

The following questions need answers: Is dyspepsia (including peptic ulceration) increasing under war-time conditions in the Royal Navy, and what specific conditions, if any, may be held responsible for an increase in dyspepsia as a whole or an increase in any particular variety of dyspepsia? Examination of the large groups in this series shows a remarkably constant incidence when the ratio of active service RN to new entries is considered. The actual figures are: gastric ulcer 1 to 2.7, duodenal ulcer 1 to 3.5, gastric dyspepsia 1 to 2.8, duodenal dyspepsia 1 to 3.5, nervous dyspepsia 1 to 3.8, dyspepsia of uncertain origin 1 to 3.8. Considering the 1003 cases as a whole the ratio is 1 to 3.7. The expansion of the Royal Navy (more than four times its peace-time strength) since August, 1939, is more than sufficient to account for any apparent increase. Nor has there been any true increase in the percentage incidence of dyspepsia as a whole in the Royal Navy. The addition of new personnel derived from the prewar civilian population is responsible for the large number of dyspeptics admitted to Naval hospitals.

In answering the second question some observations may be made on nervous dyspepsia and dyspepsia of uncertain origin. Cases considered to be nervous dyspepsia have been investigated in consultation with a neuropsychiatrist. Nervous dyspepsia as here referred to is not a disease entity but a syndrome. It is not a gastric disease. Among new entries it has been found that cases of nervous dyspepsia associated with anxiety state are more numerous than in any other category (40 out of 76). The changed conditions from civil life to unaccustomed war conditions, particularly at sea, seem to have a deleterious effect on those who possess an unstable psychosomatic balance. It is well known that dyspepsia is the common complaint of the neurasthenic. War-time Service conditions do not lead to the feelings of comfort and peace of mind which are fundamental to normal digestion. Prolonged anxiety states would be expected to produce increased sympathetic tonus with a reduction of both stomach motility and gastric secretion, but gastric analysis in 35 cases showed no diminished acid secretion in 22 out of 35. Moderate hypochlorhydria may arise as a functional disturbance and depend on psychic alterations: there was hypochlorhydria in 9 cases only. Achylia gastrica was present in 4 but this condition cannot be considered as due to anxiety till anxiety symptoms were present.

A large number—175—patients with dyspepsia of uncertain origin had joined the Service since the outbreak of war. The evidence indicates that a complete change from the diet of civil life has produced symptoms. This applies especially to service in small ships where care in cooking is not always possible. Overcooking, reheating of meals, excess of tinned and fried food, short time allowed for meals, are factors difficult to control. Many of these patients had been accustomed to controlling symptoms in civil life by taking alkaline powders regularly. In a few cases an excess of alcohol played an important part.

SUMMARY

A series of 1003 cases of dyspepsia admitted to a large Royal Naval auxiliary hospital between October, 1939, and September, 1941, is reviewed.

There is no evidence that war-time service in the Royal Navy has increased the incidence of dyspepsia as a whole. The expansion of the Service and the inclusion of personnel from the prewar civilian population accounts for any apparent increase in incidence.

The relation of war service to the particular varieties of dyspepsia is discussed, especially with reference to nervous dyspepsia, peptic ulcer and dyspepsia of uncertain origin.

There is an urgent need for organised clinical research into all aspects of the problem of dyspepsia of uncertain origin (so-called "gastritis") which in the series accounted for 24% of dyspeptics.

There is a close similarity between the findings and those from other Service hospitals in regard to the ratio of gastric to duodenal ulcer and the percentage of duodenal ulcers in the dyspeptics admitted to hospital.

There is a long history in most cases; only 12% of the cases of duodenal ulcer and 20% of the cases of duodenal dyspepsia dated their symptoms from taking up war service, 62 out of 404 cases of duodenal ulcer, and 17 out of 148 cases of duodenal dyspepsia had symptoms for 11–15 years.

The early onset of symptoms and complications in cases of duodenal ulcer is noted.

Of the 1003 dyspeptic cases admitted 56% had clinical ulcers, in 47% ulceration was proved radiologically (6.7% gastric, 40% duodenal and 0.5% anastomotic), 15% were cases of duodenal dyspepsia, and 24% suffered from dyspepsia of uncertain origin.

Cases of proved peptic ulceration should be invalided from the Service unless there are exceptional circumstances under which adequate dietary control is practicable. In all, 329 of the 1003 cases in this series were invalided from the Service.

A statistical method of classifying dyspepsia which has practical value is presented.

I wish to thank Surgeon Rear Admiral H. E. R. Stephens for permission to carry out this work, Surgeon Captain W. I. Gerrard for his coöperation, Prof. R. S. Aitken for the gastroscopic examinations, and the Medical Director General of the Navy for permission to publish this paper.

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RADIOLOGICAL EVIDENCE OF DECALCIFICATION IN SOUTH AFRICA

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IN recent months slight changes have had to be made in our standard radiographic exposures which may have an important bearing on present-day nutrition. Our observations, which are not capable of being recorded statistically, have been made in two entirely different social classes: (1) private, reasonably well-to-do patients who can afford the fees of radiological investigation, derived mainly from the Cape Town urban area, but including about 25–30% of patients from rural areas, and consisting predominantly of Europeans; (2) public hospital patients, Europeans and non-Europeans, seen at the Groote Schuur Hospital at Observatory near Cape Town.

For the last 18 months there has been no change in our equipment—the same type of film has been used and the processing of films has also been rigidly standardised. In the last 4 to 5 months, however, we have been impressed by the fact that bone shadows in the films have been relatively often over-exposed. This fits in with the fact that the time required to show adequate bone contrast in developing the plates has often been shortened considerably, and we have had to reduce more films than usual. Quite often we have had to shorten appreciably the exposure used. For example, 18 months ago the standard exposure used by one of us (A. A. M.) in taking posteroanterior views of the normal male skull was 84 kVp, 60 mA, 7 sec. Now this is far too heavy an exposure and the factors have had to be reduced to 77 kVp, 60 mA, 6.5 sec. During the last 9 months a symptoms, duration of symptoms, predisposing factors, previous or present hæmatemesis, melæna, perforation or gastroduodenal operation for symptoms, fractional test-meal findings (the standard meal and histamine tests were both used in this series, and in every case of achylia gastrica the condition was confirmed by the histamine method), and disposal The ages at onset are shown in table III, the predisposing factors in table II, and the duration of symptoms in table IV

Gastric ulcer was found in 18 group 1 and 49 group 2 personnel—a ratio of 1 to 2 7 Of the 3 patients in whom the onset was before the age of 15, one began symptoms in his 13th and 2 in their 15th year Symptoms had been present for less than 2 years in 23, of these, 5 in group 1 had developed symptoms since the war began, and the remaining 18, in group 2, had developed them since their entry into the Service There were no cases of hæmatemesis or melæna in the series, but 6 had a history of previous hæmatemesis On admission 7 were cases of perforation, and 4 had histories of previous perforations Only 1 patient had a history of previous operation and 1 was treated by operation (excision) after admission Gastric analysis was performed in 31 cases of the 67, and showed normal acidity in 9, moderate hyperchlorhydria in 7, considerable hyperchlorhydria in 1, hypochlorhydria in 8, and benign achylia gastrica in 6 Two patients with the last condition were first suspected of having malignant disease, but proved to have simple ulcers On discharge from hospital 40 were invalided from the Service, of the 27 who returned to duty many no doubt will since have been invalided after being admitted to other Naval hospitals with a return of symptoms

TABLE V—PUBLISHED FINDINGS IN DYSPEPTIC PATIENTS ADMITTED TO SERVICE HOSPITALS IN THE PRESENT WAR (after Brockbank)

Author	Service	Total cases	Ulcers %	DU/GU
Allison and Thomas	Navy	100	45	5 7
Wade	Navy	1003	a 45* b 56†	6* 5 4†
Brockbank	Army	931	42 5	5 3
Graham and Kerr	Army	246	64	6
Maingot	General	256	56	8 3
Morris	Army	500	50	
Payne and Newman	EMS	287	89	4
Spillane	Army	200	32	5 4

* Confirmed ulcers

† Clinical ulcers, including gastric and duodenal dyspepsia types 2 and 3

Duodenal ulcer was found in 89 group 1 and 315 group 2 personnel, the ratio being 1 to 3 54 Of the 17 in whom the onset was before the age of 15, one was under 10, one in his 12th, 5 in their 13th, 5 in their 14th, and 5 in their 15th year when symptoms began Symptoms had been present for less than 2 years in 75 cases, of these, 23 had developed symptoms in civil life, 38 since entry to the Service, and 14 were group 1 men who had developed symptoms since the start of the war The high percentage with long-standing histories is noteworthy, only 52 (12%) out of 404 dated their symptoms from the time of taking up war service Hæmatemesis was present in 12 and melæna in 11, 34 had a previous history of hæmatemesis and 10 of melæna There were 12 cases of perforation and 35 had a previous history of perforation

Operations were performed on 4, and 10 had previous histories of operations Gastric analysis done on 192 cases gave the following results normal 52, moderate hyperchlorhydria 67, considerable hyperchlorhydria 34, hypochlorhydria 25, benign achylia gastrica 14 On discharge from hospital 207 were invalided and 197 returned to duty, many of these have presumably been invalided since

Anastomotic ulcers were found in 3 group 1 men and 2 of group 2 All were invalided from the Service

Gastric dyspepsia affected 9 in group 1 and 21 in group 2 (including 1 WRNS), a ratio of 1 to 2 3 Symptoms had lasted less than 2 years in 7, having begun in civil life in one and since entry in the rest None was suffering from hæmatemesis, melæna or perforation at the time of observation, but 9 had a history of previous hæmatemesis and 7 of previous perforation, 3 had had previous operations and 10 had a history of positive radiological findings Gastric analysis in 13 cases gave the following results normal 3, moderate hyperchlorhydria 4, hypochlorhydria 6 On discharge from hospital 26 returned to duty and 4 were invalided from the Service

Duodenal dyspepsia was found in 33 group 1 men and group 2, a ratio of 1 to 3 5 Of the 4 in whom the onset before the age of 15, one was in his 12th, one in his 13th, one his 14th and 1 in his 15th year when symptoms began 30 cases the symptoms had lasted less than 2 years, beginning in 2 of them in civil life and in 20 since entry, 8 were regular Naval personnel in whom symptoms had developed since the start of the war Previous hæmatemesis was reported in 24 and previous melæna in 12, 24 had perforated in the past, 12 had had operations, 29 had a history of positive radiological findings Gastric analysis in 63 cases gave the following results normal 14, moderate hyperchlorhydria 20, considerable hyperchlorhydria 7, hypochlorhydria 16, benign achylia gastrica 6 On leaving hospital 118 returned to duty and 30 were invalided from the Service

Nervous dyspepsia affected 16 group 1 and 60 group 2 personnel Symptoms had lasted less than 2 years in 38, of whom 1 developed them first in civil life and 34 after entry to the Service, symptoms had developed in 3 Naval personnel since the start of war thus, 37 out of the 76 cases had developed their dyspepsia since war started Gastric analysis in 35 cases showed normal acidity in 10, moderate hyperchlorhydria in 10, considerable hyperchlorhydria in 2, hypochlorhydria in 9 and achylia gastrica in 4 On discharge from hospital 72 returned to duty and 4 were invalided

Reflex dyspepsia was present in 2 group 1 and 12 group 2 personnel Symptoms had lasted less than 2 years in 2, having begun during civil life in one and since entering the Service in the other Chronic appendicitis was present in 8, chronic cholecystitis in 1 and constipation in 4, 1 had pulmonary tuberculosis Gastric analysis, in 4 cases, gave normal results in 3, the other case showed moderate hyperchlorhydria After appropriate treatment 13 cases were discharged to duty, the case of pulmonary tuberculosis was invalided

Achlorhydric dyspepsia was found only in 4 group 2 men In 1 it had begun at 16, at 26–30 in 1, at 31–35 in 1, and at 36–40 in 1 The symptoms had begun in civil life and lasted less than 2 years in 1, in 1 it had lasted for 3–5 years, and in 2 for 6–10 years There was a family history in one case and *psychological factors were present in the* one patient who was invalided Gastric analysis showed benign achylia gastrica in all 4 cases

Hyperchlorhydric dyspepsia was found in a group 2 (HO) rating aged 18, who had had heartburn, acid eructations and epigastric pain for 5 years He was discharged to duty with instructions to take alkaline powders after meals

Fat dyspepsia was also present in only one case, a WRNS of 20, who had had symptoms for 5 years She was discharged to duty

Dyspepsia after gastrectomy for peptic ulcer was seen in 3 cases, all group 2, aged 28, 32 and 37 The one case in which gastric analysis was done had benign achylia gastrica All 3 were invalided

Dyspepsia of uncertain origin was seen in 46 group 1 personnel and 175 group 2, a ratio of 1 to 3 8 Symptoms had lasted less than 2 years in 102, of whom 82 were group 2 and 20 group 1 personnel who had developed symptoms since war started Symptoms were secondary to phthisis in 1 case Gastric analysis in 91 cases gave normal results in 34, moderate hyperchlorhydria in 21, considerable hyperchlorhydria in 7, hypochlorhydria in 22 and benign achylia gastrica in 7, one of which was thought to be a case of malignant disease until gastroscopy proved the contrary In all, 188 cases were returned to duty and 33 invalided

Alcoholic gastritis was found in 17 group 2 personnel only Symptoms dated from their entry into war service in 6, 3–5 years in 5, 6–10 in 3, 11–15 in 3, and 16–20 in 1 Repeated excessive indulgence in alcohol was admitted by all the patients, and in 2 of them there was hæmatemesis after consumption of large quantities of raw spirit Gastric analysis in 6 cases gave normal results in 1, moderate hyperchlorhydria in 2, hypochlorhydria in 2 and benign achylia gastrica in 1 Gastroscopic examination, in 2 cases, revealed atrophic gastritis in one and hypertrophic gastritis in the other All returned to duty

DISCUSSION

It is established that dyspepsia in general and peptic ulceration in particular have increased considerably between 1920 and 1939 (Rivers and Ferreira 1938, Hinton 1933, Wolfert 1937) No definite reason has been assigned for this increase, but the stress and strain of modern life during the past 20 years are thought to play a notable part Under war conditions these stresses are another 2 But even with such patients success may be deceptive In cold weather chilblains deteriorate; when milder weather sets in they heal I have therefore regarded as successful only those cases which improved *during* a period of cold weather As the temperatures were low from the middle of January up to the end of February, there were at least 6 weeks of nearly uniform weather conditions in which to make observations I tried to obtain other evidence of the effect of the treatment In 3 cases only one hand was seriously affected and the other hand was nearly free from chilblains, in these, only the affected side was bandaged In 2 cases the chilblains on the treated side improved, whereas the other hand developed large chilblains where only a slight redness had been visible In the third case, the treated side did not react at once, but remained unchanged for a week, at the end of which time the untreated side was much worse than the treated Continued treatment brought definite improvement for both hands Ointments only were used on 2 cases for a week, with only very slight improvement, bandaging was then begun and complete healing followed In 2 other cases there was recurrence after the usual initial improvement, which had appeared within a week of the start of treatment *It was found, however, that the boys in question* had applied their bandages too loosely A few days after this had been put right the chilblains disappeared again

The most impressive result was that most patients reported a definite improvement in their symptoms after only a night or two Itching and tenseness had gone and pain was less Externally, no change was visible at this stage, objective signs of healing could be found only three or four days later In 3 cases the treatment was not fully successful In one success was achieved only after a fortnight, and only by bandaging the arms for 20 hours out of 24 In another all fingers of both hands were affected, during the previous winter they had ulcerated, and long treatment with ointment had been necessary This winter, hyperæmia was started as soon the first signs of chilblains became visible, in spite of this they developed, but they did not ulcerate and were not as large as they had been the year before, a response was achieved only by bandaging the arms for 20 hours out of 24, and even then healing was slow The third case showed no clear response to treatment After about a fortnight, some improvement was visible, but this may have been due to milder weather

The reason for the beneficial effect of this local venous congestion is not easily understood Lewis says that the limb which has been chronically exposed to cold reacts with vasodilatation, caused probably by the liberation of a vasodilating substance, and its temperature falls This fall of temperature suggests that the circulation in the superficial capillary blood spaces is slowed down so much that it nears complete stagnation Passive hyperæmia also leads to stagnation, but here the arterial inflow is unhindered, and only the outflow slightly impeded More blood is thus forced into the limb and moved slowly through it This movement is going on under an increased vis a tergo, and it seems reasonable to suppose that this mechanism forces blood through all potential blood spaces in the limb, including the capillary spaces dilated (and paralysed) by cold, thus reopening the circulation through them

This tentative explanation is supported by the fact that passive congestion slightly raises the temperature of a limb, indicating a good circulation If, however, the bandage is applied too firmly and the outflow restricted too much, the limb becomes cold and the congestion has no curative effect Here the greater stagnation is comparable to that produced by local cold

SUMMARY

Peripheral venous congestion by Bier's method was used as treatment for chilblains Out of 24 patients 21 were treated successfully

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B1 APPOINTMENTS —Since August the movements of holders of B1 posts have been controlled by the Minister of Health (see *Lancet*, 1942, ii, 233) This restriction was established in the first instance for three months, but it has now been decided to continue it until the end of January

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AN UNUSUAL MENINGOCOCCAL RELAPSE SYNDROME

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TRUE meningitic relapses after attacks of meningococcal meningitis, though uncommon, have been reported from time to time, chronic meningococcal septicæmia is a syndrome that has of late become relatively familiar The unusual feature in the first of the following two cases is the occurrence, several months after an attack of acute meningococcal meningitis, of chronic meningococcal septicæmia associated with a frankly purulent cerebrospinal fluid in a patient who showed no signs of meningitis and was in fact comparatively well and able to be up and about The second case, in which the fluid has remained abnormal for several months after clinical cure, is cited as a commentary on the possible pathogenesis of the first

CASE-HISTORIES

CASE 1 —I saw the patient, a man of 40, at his home on *Feb 7, 1941, with moderately severe meningococcal meningitis*, he had been ill two days He was mentally confused, apathetic and incontinent of urine Neck rigidity was complete, Kernig's sign was strongly positive, and there was a scanty but typical purpuric rash on chin, back and limbs On admission to the sanatorium, his CSF was turbid, meningococci were seen in the stained film He was given 2 g of sodium sulphathiazole and 20 c cm of polyvalent meningococcal antitoxin intravenously, 4 hours later, 2 g of sulphapyridine by mouth and thereafter 1 g 4 hourly to a total of 25 g Owing to short supplies it was not possible to continue sulphathiazole treatment

He responded rapidly and by the 6th day seemed normal, treatment was stopped He was allowed up on the 13th day and discharged on the 21st Two swabs of the nasopharynx were negative before his discharge, but he was not lumbar punctured because it was not then my custom to do this except for diagnostic or therapeutic reasons

Towards the beginning of July, 1941, he called at the hospital saying he felt his meningitis was returning He did not feel fit for his work as an auxiliary fireman, he had repeated attacks of coldness when all he could do was to sit in the post feeling miserable He had been rather pleased that his original illness was a serious one, so I did not regard his complaints very seriously, but I examined him carefully, in the hope of reassuring him I found nothing abnormal, no signs of meningitis, fundi were normal and blood Wassermann reaction was negative, but I did not do a lumbar puncture On July 26 I was called to his house He was in bed complaining of intense headache and shivering, his temperature was 103° F and his trunk and limbs were covered with a faint pink macular rash, Kernig's *sign* was negative and there was no trace of neck rigidity or any other abnormal sign in the central nervous system The intense headache was obviously feigned, but he was alarmed about his condition I admitted him to hospital as a probable case of chronic meningococcal septicæmia, on admission the headache vanished and the temperature fell in half an hour, blood culture was therefore not done For the next few days his temperature fluctuated though he had no physical signs On July 30 blood was taken for culture, agglutination tests

TABLE I

Date	Cell count	Protein	Chlorides	Culture
		(mg per 100 c cm)		
1941 July 31	Frank pus, polymorphs with occasional small lymphocyte	Over 200	635	Sterile
Aug 2	Turbid fluid 550 cells per c mm, polymorphs 80 %, lymphocytes 15 %, monocytes 5 %	70	560	,,
,, 14	Clear, 13 lymphocytes per c mm	60	710	,,
,, 20	3 cells per c mm	50	720	,,
Sept 15	No excess cells	40	690	,,
Nov 4	5 small lymphocytes	30	690	,,

definitely smaller exposure has had to be used for wrists, ribs in chest radiograms have appeared less dense than formerly, a large proportion of lateral views of the skull have been over-exposed and a reduced density has been especially noted in the spine and long bones The density of the soft tissues has not changed materially One of us (S. F O.) has also had many queries lately from physicians to whom the plates have been forwarded about the possible presence of osteoporosis in the spine and skull, such queries have been most unusual until recent months It would have been expected that with the ageing of tubes and equipment the exposure factors would have been increased and not, as we have found, diminished If our findings had been the result of a gradual deterioration in some quality of the film they should have been constant in every film taken This has not been the case

These observations strongly suggest that there are signs of decalcification in the bones of the general population In view of the serious implications we feel that the findings should be followed up in a properly coordinated manner Decalcification may be looked for in other directions, by comparing the time taken for fractures to heal now and 2 years ago, by examining the skeletal status of pregnant mothers and by seeing whether hospital records show an increased incidence of rickets, which is an uncommon disease in South Africa

There may be two reasons for the facts we have observed First, the cost of living has risen by about 16% since the war began, this has made foods rich in calcium (milk, cheese, eggs, green vegetables) more expensive Secondly, the population eats bread chiefly in the form of the standard loaf, which was introduced in South Africa 16 months ago and is made from a flour of 95–96% extraction Although this adds valuable nutrient properties to the diet there is unfortunately a large increase in the phytic acid content [1] If the diet of the population is poor in calcium to start with—which is very possible in the Cape Town area where much of the water is deficient in lime—the extra phytic acid will reduce the amount absorbed still further The phytic acid is the more likely cause, since decalcification has been observed not only in the poorest class of patient but also in the relatively well-to-do Further, the decalcification has been seen in rural as well as urban patients and in Europeans as well as non-Europeans To reinforce the flour with calcium carbonate would be a simple remedy

One of us (H A S) wishes to thank the Secretary for Public Health for permission to publish this paper.

PASSIVE HYPERÆMIA FOR CHILBLAINS

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No really satisfactory treatment has been suggested for chilblains I thought it might be worth trying Bier's treatment, which consists in creating artificial hyperæmia in the limb Bier first used it for the treatment of local inflammatory processes, such as boils, carbuncles, monarthritis and the like, and it was found successful by many besides its author A constricting rubber bandage (Martin's) is applied at the level of the middle of the humerus or femur, just tightly enough to ensure mild venous congestion in the distal part of the limb, this bandage may be left in position for 22 out of 24 hours In the treatment of chilblains the bandage as a rule was used only at night, and this proved sufficient in most cases

I used a Martin's bandage 2½–3 in. wide, but any other elastic bandage, even those made without rubber, will do The colour of the limb should deepen under its influence, but it should not become colder to the touch than before, and no pins-and-needles should be felt On the other hand, the bandage should constrict the limb so firmly that coldness and pins and needles are only just avoided. A reliable sign of correct technique is that the big veins in the elbow protrude, and that the colour of the arm is deep purple, without any discomfort being present In some cases swelling of the hand is visible next morning, though it subsides in a few hours This is a sign that the bandage was put on too firmly

During the winter of 1941–42 a series of 24 people treated, 16 of whom have suffered from previous years Few of them had to be treated October, November and December, since the weather comparatively mild The majority came in J most of them schoolboys between 14 and 18, but them adults In 21 cases complete success was in 5–7 days swelling, pains, itching had disappeared, small ulcers and cracks of the skin had healed The only remaining sign was redness of the skin, sometimes associated with thickening and wrinkling of the epidermis In spite of this success, the treatment was continued for at least 6 weeks If it was interrupted after this, no recurrence was observed If, however, the treatment was interrupted after a week or a fortnight, chilblains recurred at once They disappeared again after 5–7 days of renewed bandaging No other treatment was used, except in a few cases petroleum jelly to smooth the roughness of the skin All patients were told to wear woollen or fur gloves out of doors Most of them had done so before

ILLUSTRATIVE CASE-HISTORIES

CASE 1 —A schoolboy of 18 Chilblains on hands and feet every year, always ulcerating This year slight chilblains already in July Treatment of the hands started in October, when again signs of chilblains became visible These disappeared after a week The bandaging was continued till Christmas, when it was interrupted for 4 weeks No chilblains had reappeared when bandaging was resumed by way of prophylaxis on Jan 15 In February two small chilblains developed on the hands and disappeared after a few days During the same month (the patient stayed during this period in a very cold part of the country) severe chilblains developed on both feet, which had not been treated

CASE 2 —A married woman of 60 Had *often had chilblains* in previous years In February chilblains developed rather suddenly on nearly all fingers, which showed swelling, redness, and many small cracks of the skin Bandaging brought relief after 3 days After 5 days the swelling and the cracks had disappeared, and after 7 days the fingers appeared normal No complaints since

CASE 3 —A schoolboy of 14 Chilblains 2 years before, and in previous year This winter chilblains started in December, all fingers of both hands affected In January they grew worse, two ulcers appeared on the right 4th and left 2nd fingers Treatment started on Jan 18 On Jan 25 the swellings had disappeared, the ulcers were considerably smaller and healing On Feb 5 the hands appeared normal, no complaints since

CASE 4 —A schoolboy of 15 Chilblains every winter This year they appeared early in January On Feb 13 two small ulcers on two fingers Treatment with chilblain ointment without effect Bandaging started on Feb 20 On Feb 25 ulcers healing March 2, ulcers healed, no complaints Skin still shows slight redness

CASE 5 —A schoolboy of 16 First had childblains 2 years before, feet and hands affected They started this year in mid January on both feet On Jan 20 both feet showed *chilblains, three on the right and two on the left* Swelling, itching, and pain considerable After one night of bandaging symptoms improved This improvement continued On Jan 26 all chilblains had disappeared Discontinued bandaging on Feb 4 One chilblain reappeared on Feb 10, bandaging resumed and the chilblain vanished again (Feb 18) No complaints since, though bandaging was not carried out regularly

The remaining 19 cases in the series gave similar histories and 1C of them responded equally well to the treatment

DISCUSSION

Chilblains are benign and tend to heal, if protected against cold Some patients get their chilblains through negligence, they do not wear gloves, or sufficiently wide shoes and warm stockings, every time they are exposed to cold weather, when they acquire childblains they become more careful, and this alone is often sufficient to make the chilblains heal In such cases any treatment might appear to be successful, although the healing process might not have been affected by it Better evidence is gained from those who, in spite of care, get chilblains every winter I treated 16 patients in this category, with full success in 13 and partial success in

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[1] See Harrison, D C and Mellanby, E *Biochem J* 1939 33, 1660 McCance, R A and Widdowson, E M *J Physiol* 1942, 101, 44

DIFFERENT SOURCES OF PROPAGANDA

The total number of mothers covered by the inquiry, 3930, was reduced to 3860 after eliminating 70 incomplete forms. Of these mothers, 3569 (92%) had heard of the scheme. It may therefore be inferred that roughly 9 out of every 10 urban working-class mothers are now aware of the immunisation scheme so that the inadequate response cannot be due to mere ignorance of its existence.

From table I it will be seen that, of the 3569 mothers who knew of the scheme[6] 2001 (56%) had heard through the school organisations and 636 (18%) from child-welfare organisations, that is, about three-quarters had heard from these two sources. Of the remaining quarter, casual references by friends or neighbours accounted for 307 cases (9%), private doctors and other non-official medical sources for 238 (7%) and the radio for 135 (4%), taking newspapers, public posters and films together, as a category of propaganda where personal contact is lacking, these accounted for only another 172 mothers (5%). Direct circularisation by the local authorities, and nursery schools were relatively unimportant sources of knowledge of the scheme for these mothers (accounting for 2% and 0·5%).

Table I also shows the effectiveness of each source of knowledge of the scheme. For each source, mothers with children of immunisable age have been grouped according to whether all, some or none of these children had been immunised. The effectiveness of each source can be judged by the percentage of the mothers hearing from that source who had had all their children immunised; a supplementary index is the percentage who had had no children immunised, the two indices yielding similar results. *Using the first index as a basis for* comparison, the most effective sources were private doctors, child-welfare organisations, schools and direct circularisation from local authorities which resulted in about half the mothers, *in each case*, having all their children immunised. The next group in order of effectiveness comprised radio and newspapers just over a third of these mothers having had all their children immunised. Friends and neighbours public posters and films appeared to be the least effective sources of all, resulting in complete success in only a quarter to a tenth of cases. Considering all the 3497 mothers with children of immunisable age together (whatever the source of their knowledge of the scheme), 45% had had all and 40% had had none of these children immunised, the remaining 15% had had only some done.

TABLE I—SHOWING HOW FREQUENTLY PROPAGANDA FROM DIFFERENT SOURCES OF KNOWLEDGE OF SCHEME REACHED, AND HOW EFFECTIVELY IT INFLUENCED, 3569 MOTHERS

Source	Mothers (M) with one or more children of immunisable age			Mothers with no children of immunisable age	Total mothers
	Children immunised				
	All	Some	None		
	M (% *)	M	M (% *)	M	M (% †)
School (doctor, nurse or teacher)	961 (48)	387	653 (33)	0	2001 (56)
Child welfare (doctor nurse or health visitor)	315 (52)	56	240 (39)	25	636 (18)
Friends neighbours, relations	73 (26)	6	207 (72)	21	307 (9)
Private doctor district nurse hospital	123 (54)	43	64 (28)	8	238 (7)
Radio	46 (35)	4	80 (62)	5	135 (4)
Newspapers	23 (34)	1	43 (64)	3	70 (2)
Direct circularisation by local authority ‡	28 (47)	12	20 (33)	3	63 (2)
Public posters	11 (23)	5	32 (67)	5	53 (1·5)
Films	5 (10)	1	43 (88)	0	49 (1)
Nursery school	0	6	9 (60)	2	17 (0·5)
	1585 (45)	521	1391 (40)	72	3569 (100)

* These percentages are based on the number of mothers with children of immunisable age hearing from the source given (indicating effectiveness of the source)

† These percentages are based on the grand total of mothers (indicating frequency of the different sources)

‡ From public health department or from billeting officer

TABLE II—IMMUNISATION OF CHILDREN BY AGE GROUPS AND ACCORDING TO SOURCE FROM WHICH THE MOTHER HAD HEARD OF SCHEME

Source	Age group of children							Total	
	Under 1	1–5			5–14				
		Im	Not im	Im %	Im.	Not im	Im %	Children	Im %
School	144	270	630	30	2277	1348	63	4669	55
Child welfare	139	314	360	47	341	185	65	1339	49
Friends, &c	38	40	147	21	69	197	26	491	22
Private doctor &c	30	69	60	54	167	77	68	403	59
Radio	12	30	46	40	42	78	35	208	35
Newspapers	10	17	40	30	29	39	43	135	34
Direct circularisation	5	13	29	31	80	35	70	162	57
Public posters	4	3	23	12	12	24	33	66	23
Films	4	3	31	9	7	34	17	79	13
Nursery school	2	10	9	53	19	4	83	44	66
	388	769	1375	36	3043	2021	60	7596	50

Im = immunised

Taking into account both frequency and effectiveness, it may therefore be concluded that schools and welfare centres provide by far the most satisfactory media for propaganda. Personal contact by private doctors, and direct circularisation by local authorities, although among the most effective sources, reach at present only a small proportion of mothers. Radio and newspapers are roughly only two-thirds as effective as schools and child-welfare services, and they too reach only a relatively small proportion of mothers, while not only have the cinema and public posters failed to carry their message widely but the message when received has produced poor results. Clearly, the methods of direct approach (through schools, welfare centres, private doctors and circularisation) are superior to chance and haphazard sources, and it would be an improvement if direct sources could be widened from the present 80% to a 100% coverage, and the haphazard sources correspondingly reduced. It is even more important, however, that the actual effectiveness of the two predominant sources of the propaganda (schools and welfare centres) should be substantially increased.

The average figures given in table I obscure wide variations from locality to locality. These variations apply both to the proportion of mothers who had heard of the scheme from a given source, and to the effectiveness of that source. Even where the proportion of mothers who had heard of the scheme through schools was roughly the same in different localities, the effectiveness of the school propaganda differed widely, reflecting differences in the efficiency of local schemes. This may be partly due to the facts that each of the 1500 local authorities is responsible for its own publicity (though an increasing number are availing themselves of the material supplied by the Central Council for Health Education acting in conjunction with the Ministry of Health), and that the authority responsible for child welfare in a given area may not be the same as that responsible for education. There is evidently much room for increased local coördination.

Table II supplements table I by showing the effectiveness of the different sources from which mothers heard of the scheme, as indicated by the proportion of the children immunised. For this purpose, the children have been divided into three age-groups, the first for children for abortus fever, and film for malaria, all proved negative On July 31 his temperature was 100° F, lumbar puncture released thick, frankly purulent fluid A fine macular rash had again developed Treatment with sulphapyridine, 1 g 4-hourly, was begun but next day hearing that blood-culture was negative, I stopped treatment for 12 hours, and repeated the blood culture, which was again negative Treatment was resumed with sulphathiazole, on the theory that the organism might have become sulphapyridine-fast On Aug 2 the CSF was much clearer, in spite of the small dosage of sulphonamides (4 g of sulphapyridine and 4 g of sulphathiazole) Sulphathiazole was continued, 1 g 4-hourly, to a total of 32 g On Aug 14 the CSF was clear, and the patient was discharged on Aug 21 with instructions to report periodically CSF findings were as shown in table I

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[6] We found that 9 out of every 10 mothers gave only one source from which they had heard of the scheme. The data for the minority who had heard from more than one source were analysed and as the relative frequency of sources was found to be similar the presentation of a separate set of statistics was not considered justifiable. These multiple source forms were therefore reduced to single sources by assigning each to the most important of the sources mentioned this importance being based on the distribution of the single source forms for the [illegible] in question.

CASE 2—On Nov 2, 1941, a boy of 15 was admitted with moderately severe meningococcal meningitis CSF straw-coloured, meningococci present He received in 6 days a total of 33 g of sulphapyridine and improved rapidly On Nov 14 he was ready for discharge, as far as his physical condition went, but his CSF still showed 55 cells per c mm He was accordingly given a second course of 30 g sulphapyridine On Nov 21 there were still 12 cells per c mm present and protein was 100 mg per 100 c cm, but it was impracticable to keep him longer in hospital He has reported periodically for examination particulars of his CSF are as given in table II

TABLE II

Date	Cell count per c mm	Protein	Chlorides	Sugar	Culture
		(mg per 100 c cm)			
1941					
Nov 2	—	—	—	—	Meningcocci
,, 14	55	100	700	—	Sterile
,, 21	12	100	740	—	,,
,, 28	5	60	720	60	,,
Dec 3	5	70	720	—	,,
,, 30	25 sm lym	70	760	—	,,
1942					
Feb 11	3	70	740	70	,,

sm lym = small lymphocytes

Pressure was increased at every lumbar puncture He has remained well except for a fortnight towards the end of January, 1942, when he suffered from recurrent headaches In view of my experience with the first case, he is being kept under observation, although it is recognised that a slow return to a normal CSF after acute meningitis is not uncommon

DISCUSSION

Although cultures of blood and CSF were both negative in the first case on the occasion of his relapse, the initial attack in February, 1941, was confirmed bacteriologically and there can be little doubt that the case was one of chronic meningococcal septicæmia, possibly originating and being fed from a focus of infection in the spinal canal Whether the CSF ever returned to normal after the original infection, and how long the patient went about with pus in his canal, is unknown, but it is likely that at least 3 weeks before his second admission and probably for longer he was suffering from repeated mild attacks of meningococcal septicæmia The most striking point clinically was the presence of a purulent CSF and the complete absence of any neurological sign From the therapeutic point of view, the danger of relying on clinical appearances in assessing cure in cases of meningococcal meningitis becomes apparent

SUMMARY

Two cases of meningococcal meningitis are described In the first several months after the initial attack chronic meningococcal septicæmia developed, associated with purulent CSF unaccompanied by neurological signs In the second case after the initial attack the CSF has remained abnormal but apart from some headache there have been no recognisable symptoms Both cases emphasise the importance of verifying apparent clinical cure by lumbar puncture The first case indicates that sulphapyridine may produce complete apparent clinical cure without sterilising the CSF

I wish to thank the medical officer of health for Southend-on-Sea for permission to publish this case, and Dr H B May of the Emergency Pathological Service for the bacteriological reports

DIPHTHERIA IMMUNISATION IN EN AND WALES

A STATISTICAL STUDY OF THE REACTIONS AND DIFFICULTIES OF MOTHERS

BY THE COMMITTEE FOR THE STUDY OF SOCIAL MEDICINE

ACCORDING to a Ministry of Health[1] estimate the proportion of children immunised in England and Wales is at least a third Since, however, the child population will not be adequately protected against diphtheria, in the official view, until at least 3 out of every 4 children are immunised, it is obvious that the response by parents to the scheme for immunisation has far from reached expectations, in spite of the varied media of propaganda and education employed In view of this, the Ministry of Health [2] has recently initiated a new campaign

The object of the present inquiry, a sample investigation carried out from September, 1941, to May, 1942, was to determine some of the major reasons for the comparatively poor response to the immunisation scheme, taking England and Wales as a whole, in order that the most efficient and economical improvements might be recommended by the committee The mother was made the focal point of the inquiry, and her reactions, objections and difficulties connected with the scheme were analysed

METHODS OF INQUIRY

To obtain a balanced sample of the total population of mothers, 25 localities were chosen so as to cover the greater part of the country, and also so as to include towns in different size-groups, as well as reception, evacuation and neutral areas [3] As the most convenient way of interviewing mothers by skilled personnel, the *lady almoner of a leading hospital in each locality* was asked to obtain the required information, and the success of the inquiry was largely due to the excellent cooperation given Each almoner was sent 100 or 200 questionnaire forms, the number depending on the size of the locality chosen, to be filled in for the first 100 or 200 mothers, having any children under 14 years old who entered her office—whether because of their own illness, or on a visit to patients, or for any other reason In this way a random sample of mothers of children under 14 attending these hospitals was obtained Although the sample is weighted in favour of urban areas and of working-class families, it is these which contain the bulk of the population at risk

The age-composition of the total number of children of these mothers was compared with that estimated for the whole of England and Wales for the year 1942[4], the differences were found to be statistically insignificant The total number of mothers covered by the sample was 3930, and the number of children under 14 years 7596 The main questions asked each mother were

1 Whether she had heard of the scheme for the immunisation of children against diphtheria

2 If she had heard, the source of her knowledge of the scheme

3 For each child under 14 years (*a*) age, (*b*) whether immunised, (*c*) age when immunised [5]

4 If not all of her children of "immunisable age" (i e, over 1 year) had been immunised, the reason for this omission

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[1] Circular 2627, April, 1942

[2] Circular 2677, July, 1942

[3] The 25 localities and hospitals from which data were collected are as follows London, North (Royal Northern Hospital), West (Hammersmith Hospital) and West Central (University College Hospital), Manchester (Northern Hospital), Liverpool (Royal Infirmary), Leeds (General Infirmary), Sheffield (City General Hospital), Bristol (General Hospital), Newcastle (Royal Victoria Infirmary), Hull (Royal Infirmary), Cardiff (Llandough Hospital), Leicester (Royal Infirmary), Nottingham (General Hospital), Stoke on Trent (North Staffs Royal Infirmary), York (County Hospital), West Bromwich (West Bromwich and District General Hospital), Carlisle (Cumberland Infirmary), Oxford (Radcliffe Infirmary), Uxbridge (Hillingdon County Hospital), Bedford (Bedford County Hospital), Harrogate (Harrogate and District General Hospital), Tunbridge Wells (Kent and Sussex Hospital), Rochester (Hospital of St Bartholomew), Penzance (West Cornwall Hospital), Chelmsford (Chelmsford and Essex Hospital)

[4] Dr Enid Charles's "moderate assumption" in Special Memorandum No 40, of the London and Cambridge Economic Service

[5] Information under heading (*c*) has not so far been analysed

The third main group of reasons to be considered (group 3, 323 mothers) relate essentially to difficulties of administration. Nearly the whole of this group consisted of those who, while already in agreement with the desirability of immunisation appeared not to have had sufficient instructions as to how or where to have the immunisation actually done (group 3a, 301 mothers). The commonest reasons given (given by 113 of the 301 mothers) were that they were waiting until their children of preschool age were old enough to go to school and be done there, or, simply, that they did not know what to do with children under school age. Many of these mothers had heard of the scheme through the schools, but apparently did not realise that their younger children could be immunised at welfare centres: a significant number of the children were not attending these centres. The analysis thus reveals the great importance of attacking the problem of families where the older children have been immunised at school but where the pre-school children are not immunised. Of the other mothers in group 3a, 85 were waiting to hear from the school or child-welfare centre (some of these mothers had signed forms many months before), and, not having any definite instructions, they just took no steps; in some instances the delay was probably no more than is normal or reasonable. A further 14 mothers had children who were ill when their school-mates were immunised, and, on returning to school, these children found that they had "missed their turn," since their class was considered "done." Another small group (19 mothers) had difficulties associated with evacuation. Of the remaining 70 mothers, 65 "just did not know what to do," although they stated that they wanted their children to be immunised; some were not attending welfare centres. From perusal of individual forms, it appears that a large proportion of this last subgroup of mothers had heard of the scheme through casual sources, so that an improvement would be expected if the coverage by direct approach (e.g., school, welfare private doctor) be increased; it should be noted, however, that some of these mothers, unaware of facilities for free immunisation at the welfare centres, had not been to their own doctors lest a fee would be charged. Finally, only 22 of the 323 mothers in group 3 mentioned reasons directly indicating inadequacy of medical facilities (group 3b). These reasons included lack of a clinic at a reasonable distance, and shortness of supply of serum to a private doctor.

The committee is aware that the data presented are liable to errors associated with answers by the mother which involve memory and opinion though the check afforded by the written remarks of the almoners themselves on individual cases has probably reduced such errors in the present inquiry. The results should, the committee believes, form a useful complement to those previously collected in official inquiries.

RECOMMENDATIONS

On the basis of this statistical analysis, and of an examination of existing local publicity and arrangements, the committee puts forward some practical recommendations for the improvement of the immunisation scheme. It recognises that some areas are already proceeding on these or other satisfactory lines and have no need of improvement; also that an encouraging number of local authorities are responding to the Ministry of Health's recent offer of assistance in local publicity.

For Pre-school Children.—1. Efforts should be concentrated primarily on direct circularisation and personal contact by the local authority, on the child-welfare centre and the school organisation and on the private doctor. The school service and the private doctor should be particularly useful in covering pre-school children of mothers not attending the welfare centre.

2. Propaganda and definite instructions should be sent out by the local authority each month to the mothers of all children born a year previously (the "first-birthday" letter system). After a short period, the authority should send a further letter, or a representative, to mothers not responding. Arrangements should be made so that it would be possible to state that immunisation by the private doctor, as well as at the welfare centre, was free.

3. Personal propaganda by the child-welfare staff requires [illegible] be intensified.

4. To reduce the number of families with school-children immunised and pre-school children not immunised, propaganda through schools should be designed to appeal to both these age-groups. Moreover, the school immunisation service should, wherever practicable be extended to include the younger brothers and sisters of children attending school, and the school propaganda should include instructions to this effect.

5. The private practitioner should take the opportunity, when a child is brought to see him, for whatever reason, to explain the scheme and urge the mother to have immunisation done, either by himself (privately or in a special session) or at the welfare centre. His task should be made easier if, as suggested in (2) above, no charge has to be made for his services.

6. The provision in each area, of an "open access" clinic, where parents can bring their children without notice, might be considered.

7. In all propaganda it should be specifically stated that it is unsafe to wait until the child goes to school.

For School-children.—1. Efforts should be concentrated primarily on the school organisation.

2. Steps should be taken to communicate afresh, or to make personal contact, with mothers not responding to forms sent from the school, or whose child was ill or new to the school when the others were immunised. Clinics for immunisation held more often at the school would assist while children escaping these regular clinics could be immunised collectively at intervals at the welfare centres, or individually at an "open access" clinic.

General Administration.—1. To secure more efficient and more uniform schemes, there should be greater coördination of local authorities in each county or defence region, under the general supervision of the Ministry of Health; increased effectiveness of school and welfare propaganda is needed much more in some localities than in others.

2. A bulletin should be published regularly by the Ministry of Health giving descriptions and results of methods used in the more successful areas, and drawing attention to the deficiencies in backward areas and to their remedies. Mothers themselves should be drawn into local campaigns in an organised way—through housewives' committees, women's guilds, &c. In this way a local interest would be evoked for each area in achieving as high or a higher degree of immunisation than the best areas, after the manner of the "socialist emulation" movement in the Soviet Union.

3. Public posters (apart from those giving merely times and places of clinics) and films which are haphazard and relatively ineffective media, should be eliminated, and the money and effort saved should be used for improvements in the planned schemes suggested above (e.g., improved organisation of the school and child-welfare services), with their more direct approach to parents; from these, results are likely to be twice as good.

4. The radio and newspapers should continue to be used by the Ministry of Health and local authorities for special appeals and for periodic announcements about the progress of the scheme nationally or in the different areas.

General Propaganda.—The following points should be brought out in addition to those already mentioned:

1. That vaccination affords no protection whatever against diphtheria.

2. That even where a child is very healthy or does not mix with others, immunisation is still necessary.

3. That it is the duty of every parent to protect his or her child, not only for its own sake but also for the sake of other children.

4. More stress should be laid on the general harmlessness of immunisation, and it should be stated that delicate or nervous children will be considered on their merits by the doctor at the time of inoculation.

5. A special effort should be made to counter a fatalistic attitude on the part of parents, and a special appeal to the father should be included; propaganda should be arranged so that parents are induced to come to a decision very rapidly.

6. In propaganda leaflets the need for immunisation should be concisely and simply expressed, so that more space can be given to precise instructions as to the exact actions to be taken by parents to have the immunisation

of non-immunisable age (under 1 year), the second for the pre-school children (1–5 years old), and the third for the school-children (5–14 years of age) Of the 7596 children of mothers who had heard of the scheme, half had been immunised, the percentage being 36 for the pre-school and 60 for the school-children; these percentages are well below the target figure of 70–80% The higher percentage for school-children is due in part to the fact that a proportion of these children had been immunised before attending school (the proportion of school-children immunised while attending school is probably about 40–50%)

Of the 1375 pre-school children not immunised, 630 (nearly half) were the children of mothers who had heard of the scheme through the schools that their older children were attending This indicates an obvious major gap in the scope of the immunisation scheme, for as judged by individual questionnaire forms many of these mothers were not aware that their pre-school children should, and could, be immunised as well as their school-children, facilities for the immunisation at schools of younger brothers and sisters are at present uncommon The other big gap in the immunisation scheme, as it affects pre-school children, is revealed by the 360 non-immunised children (about a quarter of all the non-immunised pre-school children) whose mothers had heard of the scheme through the child-welfare organisations Since not every mother with children of preschool age attends a welfare centre, it is all the more important to succeed in immunising the children of those who do

TABLE III—MOTHERS' REASONS FOR NOT HAVING CHILDREN IMMUNISED

Reasons	Mothers (M) with one or more children of immunisable age		
	Children immunised		
	None	Some	Total
1 *Adequate reasons*—			
a Child ill, immune, or had diphtheria	146 (10)	99 (19)	215 (13)
b Intending to have child immunised	252 (18)	117 (22)	369 (19)
2 *Propaganda difficulties*—			
a Poor conception of immunisation *	215 (15)	33 (6)	248 (13)
b Apathy	371 (27)	80 (15)	451 (24)
c Prejudice (mother or father)	260 (19)	16 (3)	276 (14)
3 *Administrative difficulties*—			
a Willing, but puzzled how to act †	133 (10)	168 (32)	301 (16)
b Facilities inadequate	14 (1)	8 (2)	22 (1)
	1391 (100)	521 (100)	1912 (100)

* Or undue fears of reactions Includes confusion with vaccination and fears lest immunisation may harm or upset child

† Includes waiting for child under 5 years to go to school, waiting to hear from school, difficulties of evacuation, and general lack of information

In the 2021 school-children not immunised, the mothers of 1348 (two-thirds of the total) had heard of the scheme through schools This is the greater part of the problem for the school-children, as the percentage immunised is no higher than 63% in this case The importance of school services aiming at complete immunisation of all school-children is thus emphasised It should be noted that the relatively high degree of success (65% immunisation) among school-children whose mothers had heard of the scheme through the child-welfare organisations was due to the fact that a large part of these children had been immunised before reaching school age

It can also be seen from table II that, in the 5064 school-children, the mothers of 3625 (about 70%) had heard through the schools, whereas the mothers of only 674 (about 30%) of the 2144 pre-school children had heard from the child-welfare centres This indicates that welfare centres must increase their scope and other effective organisations must play a greater part than at present in reaching pre-school children

REASONS FOR NOT MAKING FULL USE OF THE SCHEME

Table I shows that, of the 3497 mothers with children of immunisable age, 521 (15%) had had only some of these children immunised, while 1391 (40%) had had none immunised In table III are set out the reasons given by these groups of mothers for their failure to full use of the scheme

These reasons fall into three broad groups Group consists of mothers giving adequate reasons (*a*) child or children ill, or immune, or having had or (*b*) the mother intending to have immunisation done in the near future Both these subgroups are probably somewhat inflated, (*a*) because some of the mothers investigated were visiting the lady almoner on account of a sick child, and (*b*) because some mothers undoubtedly put forward their good intentions as an excuse for warding off deeper questioning Group 1 accounts for about a third of the 1912 mothers with whom we are here concerned In group 2 (about half the total) are mothers to whom the idea of immunisation has not been "sold" strongly enough to obtain full results, these mothers have been subdivided into three grades of "resistance," although each indicates the need for more efficient propaganda In group 3 (about a sixth of the total) administrative improvements are the chief need, the mothers being already agreed on the desirability of immunisation

Group 1 requires no further consideration Of the 975 mothers in group 2 (those who gave reasons revealing *deficiencies in propaganda), about half* were apathetic, roughly a quarter were prejudiced, and a quarter had either a poor conception of the idea of immunisation or undue fears of reactions resulting from the inoculation

The 248 mothers with a poor conception of the idea of immunisation or undue fears of reactions (group 2a) are in the first stage of "resistance", once their particular confusions about the scheme are disposed of, a substantial proportion of them should be willing to have immunisation done Immunisation was often confused with vaccination against smallpox, it being thought that a vaccinated child did not need immunisation, another common difficulty was the fear lest the immunisation would harm or upset the child, in some cases when the child was believed to be nervous or delicate Other mothers stated that their children were too healthy, or that they did not mix much with other children, or just that immunisation was unnecessary The misconceptions and fears in this group of mothers may be summarised as follows —

	No
1 *Fear lest immunisation will harm or upset child*	
Heard of other children falling ill after immunisation	38
Fears swollen arms	15
Child too nervous	15
Child "too young" (though over 1 year)	10
Other causes for fear	38
Total	116 (47%)
2 *Confusion with vaccination*	52 (21%)
3 *Other reasons*	
Child too healthy, or does not mix with other children	21
Will get diphtheria in spite of immunisation	6
Immunisation unnecessary, or reason not specified	53
Total	80 (32%)

These fears and confusions are obviously real ones, which have to be specifically met in propagating the scheme

The large number of apathetic mothers (group 2b, 451 mothers) may be considered as the second stage of "resistance", these mothers usually "could not be bothered" to take any action The most difficult of the propaganda-resistant mothers (group 2c, 276 mothers) are those who appeared to have *definite prejudices* against the scheme In a proportion of these cases, the mother gave the father's prejudice as the reason, sometimes with disapproval, while this may have been an excuse in some instances it is undoubtedly a factor One of the most frequent reactions of mothers in this prejudiced group was "if he's got to get it, he'll get it" It is interesting to note that not a single mother put forward any reasons against immunisation suggesting counter-propaganda by anti-vaccinationists or anti-vivisectionists It is apparent that mothers' fears and prejudices are of quite a different character

THE LANCET

LONDON SATURDAY, NOVEMBER 28 1942

DIPHTHERIA IMMUNISATION AND THE PUBLIC

THE Minister of Health having provided the tools for the active immunisation of the child population against diphtheria is anxious that local authorities should finish the job The progress they have achieved so far is shown in the answer to Prof A V HILL s question in the House (p 655) The target is no less than the protection of between 80 and 100% of the children of preschool age in England and Wales before the end of this winter and only Birmingham and Bradford have as yet scored 50 or more although Newcastle Exeter, Barnsley Leicester, East Ham and Huddersfield are good runners-up How arduous is the course is shown by the fact that only 2 great towns (Exeter and Barnsley) have high scores for both pre-school and school-children To provide facilities is one thing, to induce the public to take advantage of them—free of charge though they are—is another Some of the unconscionable lag in bringing about the immunisation of a significant proportion of children especially those of preschool age has undoubtedly been due to the lack of effective propaganda too much faith has been placed in the prayer-wheels of poster cinema and radio too little in the personal approach When the great American cities were "selling" immunisation long ago it was soon recognised that sensible and reasoned heart-to-heart talks to parents by health visitors were far more effective than reams of paper or miles of celluloid The Committee for the Study of Social Medicine, whose report appears on page 642 have produced statistical evidence to the same effect They find that nine-tenths of urban working-class mothers are now aware of the immunisation scheme about three-quarters had heard about it through school organisations (56%) and child-welfare centres (18%) Friends and neighbours (9%), private doctors and non-official medical sources (7%) radio (4%), papers, posters and films (4%) circulars (2%) and nursery schools (0 5%) were the sources of information for the remaining quarter of the mothers interviewed. In a survey covering some of the same ground, made this summer for the Ministry of Health the findings were similar, most parents learned of the immunisation scheme through the school, the welfare centre the doctor the health visitor, friends or relatives—in other words chiefly through personal intercourse Some 25% of this sample mentioned publicity in the press, or in films wireless programmes or posters as sources of information The surveyors however believe that the exact value of publicity is difficult to gauge and that it is higher than the 25% of replies would suggest

The committee assess the effectiveness of each source of information by the percentage of mothers moved by that source to have *all* their children immunised, and relative ineffectiveness by the percentage of those who were quite unmoved to action Propaganda by private doctors, child-welfare centres, schools and direct circularisation in each case persuaded half the mothers approached to have all their children protected, radio and newspapers similarly influenced a third the other methods already enumerated swayed only from a quarter to a tenth The combined results of all sources and methods were successful (all children immunised) in 45% quite unsuccessful in 40% and partially successful (some children immunised) in 15% In the official inquiry out of 2026 families, 46 9% had had all children immunised 35 6% had had none immunised, and 17 5% had had some done When both frequency and effectiveness are considered the methods of direct approach stand out as far superior to chance and haphazard sources and the committee recommend that the actual effectiveness of the two predominant sources of propaganda (schools and welfare centres) should be substantially increased That this view is shared by the Minister of Health and the President of the Board of Education is shown in their circulars 2713 and 1610 The Minister urges that each health visitor should be made responsible for securing the immunisation of children under five in her district and if necessary should be relieved for the time being from other duties in order to carry out her house-to-house mission of persuasion The President supplements this request, and points out that the teachers are in the best position to influence parents of school-children · he has addressed a letter of special appeal and advice to the heads of elementary schools

If the campaign is to achieve its target no willing parent must be discouraged by lack of facilities The committee found that a sixth of the mothers who failed to get all their children immunised were baffled by administrative difficulties Some did not realise that plans had been made to protect preschool children some had filled in forms many months before and had heard nothing further, and in some cases a child had been ill when his class at school was immunised and so had missed his turn From the official survey it appears that no less than 10% of parents with no children protected say that they had tried to get them immunised and failed for lack of opportunity Apart from illness of the child at the time when a class was done, 38% of these parents said they had filled in consent forms and heard nothing more Thus some local authorities are evidently half-hearted in carrying out the scheme SYMONS[1] suggests that the recalcitrant parent whose child contracts diphtheria should be made to pay for his treatment whereas the local authority would bear all cost in cases arising after immunisation This would scarcely be justifiable during the present phase of scattered families A brother and sister recently returned to London from a rural county; their billets had been in villages far apart The mother had given consent for both to be immunised and believed that both had been done Actually one child had been inoculated, the name of the other was on a waiting-list, the uninoculated boy contracted in London a severe attack of diphtheria the inoculated sister in the same house escaped Which was to blame? The mother, the county authority or the war? Let us try effective propaganda and await the results of the force of example before waving the stick of penalty.

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[1] Symons A D *Med Off* Oct 17

done, and the necessary action should require the minimum of formality

7 In written propaganda an offer should always be made of a personal talk, if desired, to clear up doubts and queries

The committee wishes to thank the lady almoners of the hospitals cooperating in this inquiry, whose enthusiastic interest made the collection of the data practicable, Captain A L Cochrane, RAMC, for an expense grant, and Mrs M Meinhardt for assistance in the analyses

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Reviews of Books

Clinical Hematology

MAXWELL M WINTROBE, MD, PhD, associate in medicine, Johns Hopkins University, Baltimore London Henry Kimpton Pp 792 45*s*

IN this textbook a well-known American hæmatologist has presented a coherent account of a difficult subject The advances of the last ten years have been thoroughly assimilated, the work on bone-marrow and the classification and development of the erythroblasts are adequately set out, the clinical applications are woven into the descriptions of the various diseases, and when the author uses a technical term we know what he means To those who have endured the incoherence and confusion of many current books on hæmatology this consistency makes Wintrobe's book outstanding The opening account of the development of the blood, and the various changes that have been detected before birth, does not give too much space to conflicting theories of blood-cell development, Wintrobe favours a unitarian scheme modelled on Downey's, in line with present-day ideas In the section on bone-marrow there is a balanced account of the various methods of examination, and difficulties caused by the use of post-mortem material are mentioned The megaloblast question is correctly oriented, megaloblasts and normoblasts are properly illustrated

There is no special section on technique, but the various techniques are described in the sections they apply to, this innovation—aided by a good index—is justified by results In the chapter on erythrocytes, which contains a useful table of normal values at various ages, he pleads that relative values—like hæmoglobin "percentages" and the various indices—should be given up in favour of absolute values of which the most important are Hb in g per 100 c cm, mean cell volume in c μ and mean corpuscular Hb in $\gamma\gamma$ In the section on leucocytes, living cells in motion are illustrated and described, he touches on the difficulty of distinguishing the various "blasts" and reserves the name lymphocyte for cells morphologically identical with those found in the blood, adding a final warning that no character of a cell is entirely specific He remarks that the Arneth and similar counts "enshroud a relatively simple subject with an air of complexity and mysticism", and says of Hb estimation "no single laboratory procedure is more common, few are carried out less satisfactorily" He bases his classification of anæmia on red-cell morphology because it is clinically useful and his table should help to tighten up the precision of our descriptive terms, and he emphasises the necessity for accurate diagnosis before treatment The section on blood-transfusion is practical and up to date without too much detail, the inheritance of blood groups is not described—possibly because it is not "clinical" The clinical descriptions of the blood diseases are complete and satisfying The general considerations introducing the chapter on anæmia in infancy and childhood should be read by everyone proposing to describe a "new" children's anæmia A chapter on tumours and tumour-like conditions knits up several loose ends such as reticulum-cell sarcoma and splenic anæmia, and the book ends with a short but valuable section on comparative hæmatology Perhaps the chapter on leukæmias is a weak point in this good book, the composite descriptions of all forms of chronic leukæmia are not very satisfactory, especially for differential diagnosis Omission of tropical hæmatology, including malaria, is probably deliberate

This is a book full of stimulating ideas and it is readable It sets out to be "comprehensive, complete and authoritative"—and it is The illustrations are first-rate and the 2400 classified references represent cream of the literature

Recent Advances in Pathology

(4th ed) GEOFFREY HADFIELD, MD Lond., FRCP, LAWRENCE GARROD, MD Camb, FRCP London J and A Churchill Pp 346 18*s*

FOR the authors entrusted with the responsible task of keeping up to date the indispensable books in this series, it can never be easy to sift out from the mass of published work what will have a lasting value in medical science In war-time, with restrictions on printing and paper, their task is unenviable Professor Hadfield and Professor Garrod deserve special praise for having introduced into the fourth edition of this ten year old book much information and cogent criticism without increasing its length It is a pity that the chapters on the liver and the central nervous system have had to be sacrificed Some résumé of the pathology of war time industrial diseases would have been helpful today and the section on regional ileitis is briefer than could be hoped from authorities so well qualified to write But topical subjects such as crush syndrome and essential hypertension are fittingly dealt with at length Three chapters are devoted to the important subject of experimental cancer research, and new work has been incorporated, though the chapter on irradiation of tumours has been omitted The section on vitamin deficiency diseases probably testifies best to the great advances which have been made in pathology during the last four years There is a valuable critique of recent thought on infection and inflammation Altogether the book is a masterpiece of precise thinking and careful wording It can be read with profit and enjoyment by all medical men

Revelation of Childbirth

GRANTLEY DICK READ, MD Camb London William Heinemann Pp 262 21*s*

DR DICK READ takes the view that since the rectum and the bladder are hollow viscera which can contract and empty themselves painlessly the uterus being another hollow viscus should be able to do the same Arguing on this rather *Through the Looking Glass* plan he asks whether women are justified in regarding parturition as painful, and insists that they are not He judges by what he sees, since first-hand experience is not for him A man pulling a heavy load will sweat and emit grunts and groans, his face will become congested and he looks very much like a person in great pain but he is not in pain, he is labouring A woman, bearing down in the second stage of labour, presents a similar picture, she pushes and clenches her fists, grunts and growls, and to the onlookers is in agony, she may even think as much herself Thus, he finds, a most dangerous association of ideas has arisen that of childbirth and pain But her agony he believes is of the mind and not the body Proper uterine action depends largely upon a nice balance between the sympathetic and the parasympathetic nerve supply Fear is the arch-enemy of such balance, it over-stimulates the sympathetic, the circular muscle of the cervix fails to relax, the syndrome of "tense woman, tense cervix" is set up, and painful and difficult labour is the result Avoid fear, says he, and pain and difficulty will disappear, childbirth will become a beautiful and welcome experience, the crowning achievement of womanhood The first half of the book is largely concerned with the scientific justification of this theory of natural childbirth There is a stimulating chapter on the blood-supply of the uterus, and the nerve-supply is gone into thoroughly enough, most recent work being discussed The rest of the book deals with the methods by which Dr Read persuades his patients to have natural but painless labours Every woman receiving antenatal supervision is, of course, instructed about the child growing within her Throughout pregnancy quiet confidence is inculcated, and she is taught how to relax The labouring woman must never be left alone with her terrors This is all good common-sense advice He gives some records of cases, however, which suggest that on one or two occasions he has unduly risked the child's life Dr Read asks indulgence for his style, but he has no occasion to do so, the book is simple, kindly and often brilliant acute case, and detection and control of the carrier A man with colicky abdominal pain, fever and urgent diarrhœa, with later flecks of mucus, or blood and mucus, should be sent at once to a forward clearing station or to hospital and treated as a case of dysentery Microscopic examination of the fæces will decide between bacillary and amœbic dysentery, about 10% are protozoal Unfortunately a fair proportion of the mild infections are atypical and require further bacteriological examination With the ordinary culture media the dysentery bacillus can be isolated from some 90% of typical acute infections with blood and mucus, but from a much lower proportion of mild cases with mucus only Again, delay in bacteriological examination quickly reduces the proportion of positive cultures—for example in a series in the last war the organism was recovered from 68% of cases examined in the first five days of infection, from 17% in the next five days and from only 6% in the third five days[2] However, extended use of the new desoxycholate-citrate agar[3] will greatly improve bacteriological diagnosis in the atypical and late cases, for all recent reports agree about its superiority over MacConkey or similar media When the case has been clinically diagnosed and isolated, treatment with sulphaguanidine should be begun as early as possible and without waiting for bacteriological confirmation It is true, as E R **BOLAND** remarked, that cases with a mild infection may become clinically well as quickly with rest, a short course of magnesium or sodium sulphate, a bland diet and copious fluids as with sulphonamide therapy, but the consistent and often dramatic response of severe infections to sulphaguanidine demonstrates its specific curative action Other sulphonamide compounds may also be effective and **PAULLEY**[4] makes a plea for sulphapyridine, to which, however, there is the strong objection that it, like sulphathiazole and sulphadiazine, is absorbed from the bowel, and in a dehydrated patient may form crystalline deposits in the urinary tract

As important as clinical cure—and more so from the public-health aspect—is prevention of the carrier state and chronic dysentery, for it is the dysentery carrier who initiates infection in a virgin soil The prevalence of dysentery in France in 1917–18 was in part due to the drafting there of men from the East, so that, as far as possible, men should not be transferred from a unit whose dysentery is endemic to an uninfected unit It is dangerous to take the view put forward by **HONE** and others,[5] after experience in the Middle East, that examination of stools before discharge is a waste of time and that patients with no diarrhœa are unlikely to be dysentery carriers The new selective culture medium has shown that the convalescent dysentery carrier is much commoner than was formerly thought, and **FAIRLEY** found by sigmoidoscopic examination that many of such carriers still had unhealed purulent ulcers in the intestinal mucosa This convalescent carrier state **ROBERT CRUICKSHANK** pointed out can be prevented by early treatment of the clinical case with sulphaguanidine, or, where the patient has already become a carrier, can usually be bacteriologically cured by the drug if the infection is due to one of the Flexner group of organisms[6] The Sonne carrier is less amenable to chemotherapy, although sulphasuxidine is proving more effective than sulphaguanidine Thus, there is more than one good reason for treating every case of bacillary dysentery with the new intestinal antiseptics, which it is hoped will now be more plentiful In war, even more than in peace, the medical officer must be epidemiologist as well as physician, and one of his objectives must be to return a non-infectious as well as a fit man to his unit with the least possible delay

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Annotations

THE HUNGRY COUNTRIES

THE Swedish committee for the relief of Belgian children writes from Stockholm that it is no longer possible to get official figures of the death-rate of children there Conditions are appalling far more serious than they were a year ago In Greece things are even worse The Archbishop of Canterbury and the Cardinal Archbishop of Westminster have in person asked the Foreign Secretary to present to the Government a request from the Famine Relief Committee, of which Miss E M Pye is hon secretary, for permission to send dried milk and vitamins to the children in Greece and Belgium They ask for navicerts, allowing the committee to send the minimum of these commodities necessary to maintain the lives of children under the age of 16, of expectant and nursing mothers and invalids in Greece and Belgium during the coming winter Dried milk and vitamins represent the maximum of nourishment for the smallest amount of shipping space Distribution can be controlled because the bulk is small, and the materials can be surely and conveniently handled by the welfare and feeding centres run by the Swedish and Swiss Red Cross Societies The quantities have been carefully worked out by the Famine Relief technical advisory committee Greece and Belgium are suffering most at present, but need is urgent and growing in France, Poland and Norway Similar calculations could be made on behalf of the children there It is true that large scale plans are already being made for feeding, clothing and rehabilitation of the occupied countries when their servitude ends Mr H H Lehman, retiring governor of New York, has just been appointed to direct them, and we may be sure that everything possible will then be done But that will be too late for hosts of those who are starving now Immediate prophylaxis will have the backing of all who twenty years ago saw the irreversible results of starvation during the period of growth English children might have been the hungry ones this winter if chance had taken a slightly different turn We earnestly hope that the Government will see their way to grant those navicerts

LABORATORY TECHNICIANS OF THE FUTURE

IN the last few years the laboratory technician has come to occupy a key position in the organisation of medicine No medical laboratory fulfils its function unless its activities are closely integrated with clinical work, and though this integration must depend upon medical personnel the technical staff supplies much of the motive force of the laboratory, these two rôles are well recognised and in laboratories are to be found some of the happiest examples of interdependence between fellow workers within the same mystery. The place of the pathologist is well defined and his recruitment follows recognised lines Not so with the technician, his recruitment has been and still is a somewhat haphazard affair He enters as a lab boy chosen perhaps

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[2] History of the Great War Medical Services, Pathology, p 319, London 1923

[3] Hynes, M J *Path Bact* 1942 **54** 193

[4] Paulley J W *Lancet* Nov 21, 1942 p 592

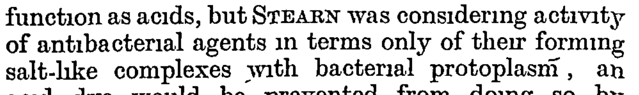
[5] Hone F R Keogh E V and Andrew R *Med J Aust* 1942 i 631

[6] See *Lancet* Sept 12, 1942, p 313

BASICITY AND DRUG ACTION

STUDIES of the ways in which antiseptic activity varies with chemical structure and physical properties have in the past achieved notable practical results—for example, the work done on the relations between narcotic action and lipoid solubility, and between the action of chaulmoograte analogues on acid-fast organisms and their activity in depressing the surface tension of water Such correlations have since the time of CRUM BROWN and FRASER of Edinburgh inspired those who were trying to establish a material basis for drug action ALBERT and collaborators[1] at the University of Sydney have investigated the basicity of aminoacridines and correlated this property with their antibacterial activity, their recent findings are set out on another page This work is related to that of the STEARNS,[2] who brought forward evidence that many triphenylmethane dyestuffs which are antiseptic act as cations, their activities being in the order of their estimated strengths as bases and increasing with increasing pH of the medium in which they are tested They therefore suggested that these dyestuffs act by combining with acid groups in the organism inhibited, and ALBERT envisages a similar mechanism in the case of aminoacridines These compounds he finds particularly suited to exact measurement of their strengths as bases by potentiometric titration and his correlations thus have greater significance than those of STEARN

STEARN himself maintained that there is probably no fundamental difference between the action of antiseptics and of other antibacterial agents, the activities of mercuric salts or of crystal violet could, under suitable conditions, be reversed and affected organisms be again rendered viable It is therefore notable that the triphenylmethane antiseptics and aminoacridines have in common with the sulphonamides an increased activity with increase in pH of the medium in which they act The sulphonamides[3] are thought to act by virtue of the similarity of their ions



$\mathrm{R-S(=O)(=NH)-O^{-}}$ to that of p-aminobenzoate, $\mathrm{R-C(=O)-O^{-}}$

Thus any influence, such as alkalinity, which increases the concentration of anions in their solutions increases their activity[4] It is inconsistent with STEARN's ideas, as they were then expressed, that increasing alkalinity should increase the activities both of substances which function as bases and those which function as acids, but STEARN was considering activity of antibacterial agents in terms only of their forming salt-like complexes with bacterial protoplasm, an acid dye would be prevented from doing so by increased alkalinity, which would keep it in solution as its anion, such is, however, the functioning form in the case of the sulphonamides SCHMELKES and others point out the clinical corollary to their findings that it is advisable to keep the pH of infected loci as high as possible during sulphonamide treatment, at pH 9 there is comparatively little difference between the antibacterial effectiveness of sulphanilamide and of sulphathiazole

The investigations which ALBERT reviews show that drug action is subject to physical and chemical laws, but they give no reason for the application of a particular rule to a particular case why should a quaternary nitrogen atom be important in some instances, and surface tension, molecular weight or basicity in others? Again, why are such correlations usually valid only in limited groups of compounds of similar structure? While the parallelism between basicity and antiseptic action is complete in the aminoacridines investigated, it will not extend far to other amines The only answer which can be given in most cases is that the different types of agents act at different receptor sites whose characters are such that they interact with molecules of given physical or chemical types In the system investigated by SCHMELKES the nature of this interaction can be stated in greater detail, for the sulphonamides act *by inhibiting enzymes whose normal substrate is p-aminobenzoate* Correlation of their activity with their approach to the physical and chemical (but not physiological) properties of *p*-aminobenzoate is thus explicable, and it is presumably in such biochemical terms that the action of other antibacterial agents will ultimately be explained

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[1] Albert, A, Rubbo, S D and Goldacre, R *Nature Lond* 1941, 147, 332, Rubbo, S D, Albert, A and Maxwell M *Brit J exp Path* 1942, 23, 69

[2] Stearn, A E and Stearn, E W *J Bact* 1924, 9 491, Stearn A E *Ibid*, 1930 19, 133

[3] See *Lancet*, 1942, ii, 223

[4] Fox C L, jun and Rose H M *Proc Soc exp Biol*, *N Y* 1942 50, 142, Schmelkes F C, Wyss, O Marks, H C, Ludwig, B J and Strandskov, F B *Ibid*, p 145

CONTROL OF DYSENTERY

BACILLARY dysentery can be one of the major scourges of war In the first world war, when enteric fever was largely controlled by prophylactic vaccination, dysentery was the prevalent intestinal infection, first in the Eastern theatres and later in France, and was responsible for a great wastage of manpower For example, the average period of invalidity in a selected group of cases in 1915 was 68 1 days and in 1917–18, 141 2 days[1] In the present war, despite the number of troops in the Middle East, dysentery has not so far assumed major proportions, and in Egypt, according to N HAMILTON FAIRLEY speaking at a meeting of the Royal Society of Tropical Medicine on Nov 4, there have been no large-scale epidemics like those of the last war Moreover, the infection has been mostly mild because of improvements in hygiene and feeding, the rarity of intercurrent debilitating diseases, and the small proportion of Shiga infections (around 10% as against 50–60% in the last war) The greater use of mechanised transport may also have reduced breeding facilities for the fly, though from all accounts this carrier of disease is still very prevalent in Egypt

For the control of dysentery in the Army, FAIRLEY insisted on the great value of prophylaxis by a high standard of sanitation, which includes such procedures as the use of deep trench latrines sprinkled with borax or other disinfectant, the covering of excrement of troops on the move, the education of military personnel by the medical officers through talks, posters and the like, close supervision of the kitchen and kitchen staff (kitchens with a dark interior and screens of fish-net were found to be good fly-deterrents), and the provision of Moslem latrines for the native labour In dealing with the actual infection, the important points are early diagnosis, isolation and treatment of and most of them have wives and children to keep If their hospital service as leading sick-berth attendants has been adequate, the GNC allow them to sit for the state preliminary and final examinations without delay, but naturally few of them do so The central council would like to see them admitted to the register without further examination, but this would entail a change of legislation Since the act will have to be reviewed if, on the advice of the Horder committee,[2] assistant nurses are to be trained and enrolled, the opportunity might be taken to meet the needs of these men The GNC might feel that their place was on the roll of assistant nurses rather than on the state register In that case they would at least be in a position to earn a reasonable salary, but they would still be ineligible for the higher nursing posts Alternatively—at least during peace time—the Navy might arrange for these men to take the state examinations during their training, instead of preparing them for exclusively Naval examinations which have no general market value Since those who specialise in massage are able to take the qualifications of the Chartered Society of Masseurs, similar opportunities could presumably be arranged for those taking nursing to sit for the state examination In peace-time the RAF arranges for men who have taken the Service trade examination in nursing to sit for the state exam if they wish.

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[1] History of the Great War Medical Services Diseases of the War, vol i p 61, London, 1922

TOXICITY OF MERCURIAL DIURETICS

James Mackenzie was always pleased to hear that digitalis had produced nausea and vomiting because then he felt sure he was dealing with an active preparation of the drug This story may be apocryphal, but there is a deal of sense in it A really potent drug will always produce toxic symptoms if given in excess, it is only the placebos, which constitute the greater part of the doctor's therapeutic armamentarium, that can be taken in almost unlimited amounts over indefinite periods without producing adverse effects The organic mercurial diuretics have lately come into wide use and it is inevitable that their toxic manifestations should receive undue attention for a while It appears from a symposium in the *Journal of the American Medical Association* for July 25 that the comparatively few fatalities reported have been due to four main causes (*a*) the use of these drugs in unsuitable cases (e g., in patients with renal disease)[3], (*b*) their continued use when they have already produced toxic effects (thus in one patient 18 out of 19 consecutive injections produced attacks of severe dyspnœa and orthopnœa lasting 2–3 minutes and the 20th injection was followed within 3 minutes by permanent cardiac asystole)[4], (*c*) the use of excessive doses, for example, 4 c cm intravenously[3], (*d*) the use of these drugs in patients likely to die at any moment so that there is no evidence that death was due to the diuretic DeGraff and Nadler[5] point out that the toxic effects may be due either to the associated diuresis or directly to the drug itself Excessive diuresis may produce disturbed electrolyte balance and the mobilisation of digitalis stored in œdema fluid—effects which need cause little concern provided the diuresis is not beyond all bounds, and provided the patient has not been heavily digitalised at the time when the diuretic is given This does not however contra-indicate the combined use of digitalis and an organic mercurial diuretic in the treatment of cardiac œdema—a combination which, as Thomson[6] has pointed out, successfully gets rid of œdema, improves the general condition of the patient and hastens the recovery of the myocardium Direct toxic effects of the mercurial diuretics are principally on the kidneys, producing tubular degeneration, and on the gastro intestinal tract, producing stomatitis and colitis, chills and fever have also been noted, and more rarely a state resembling shock A proportion of the toxic effects, including the occasional sudden deaths that have been recorded, may be due to the development of hypersensitiveness to the drug This might explain some of the reactions which occur in patients who have tolerated one or more doses satisfactorily and then suddenly react violently to a subsequent dose Evidence on this point, however, is lacking Fox and his colleagues[7] have reported a carefully investigated case in which the patient reacted strongly even to such small doses as 0 1 c cm of one organic mercurial diuretic, and here there was no hypersensitiveness to mercury bichloride, suggesting that the reaction was not due to the liberation of a more toxic ionised mercury, neither was there any reaction to a cutaneous scratch test for sensitiveness to the diuretic This case also illustrates the important practical point that patients who react unpleasantly to one member of this group may tolerate another one quite satisfactorily This group of drugs has become much less toxic since the organic mercurial salt was combined with theophylline The toxicity of 'Novasurol' is now merely of historical interest, since it has long been given up DeGraff and Lehman[8] have shown that when lethal doses of the mercurial diuretics are given rapidly to cats death is due to action on the heart, the drugs interfere with intraventricular conductivity and eventually cause ventricular fibrillation They found that sudden deaths could not be prevented by slow injection, and dilution of the drug did little to reduce toxicity, preliminary treatment with oral ammonium chloride, phenobarbital, or intravenous Nativelle's digitalin had no effect on the lethal dose But if they could discover only 26 deaths reported by clinicians, including the most carefree, during the last 16 years as being due to these diuretics, their risk must indeed be low

KEEP THE HOME FIRES BURNING LOW

SOME three million homes on the United States Atlantic Seaboard and Middle West are to have the fuel oil they use in their heating installations curtailed by about a third this winter With a view to lessening the resultant hardships a committee of medical, public health and ventilating experts have studied and reported on the health aspects of the rationing plan[9] Opinions varied on the minimum temperatures necessary for health and efficiency, but the majority opinion fixed 65° F for private and apartment houses, schools, shops and offices, 65–70° F for hospital wards and 80° F for operating theatres—rather higher than the comfort standards accepted in Britain Heating of bedrooms is considered unnecessary, except for infants, the aged and invalids, and the family is advised to take turns for dressing and undressing in the bathroom Like Sir Leonard Hill,[10] the committee urged the need for using extra clothing to save fuel—"Wear a sweater and help win the war" is their slogan Hill advocated colder factories and offices, outdoor clothes and warm underwear, and if necessary an overcoat being worn in the factory, only enough heat being provided to keep the hands warm enough for skilled work Sedentary workers, says Hill, can keep warm at their desks, as they do (or did !) when travelling in a car, by wearing an overcoat and having a rug round the knees and a hot-water bottle at the feet So protected, he maintains, with no fire and the window open, work can be done with improvement in health, it is far better for health to because someone thinks he looks promising, and his subsequent training and final destiny largely depend on luck Time and chance, as the Preacher remarks, happen to all men, but a planned society refuses to accept them blindly The medical laboratories of this country can testify that the old fortuitous methods did not work too badly, but that is not to say they cannot be improved

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[2] *Ibid* Sept 26, 1942, p 374

[3] Barker, M H Lindberg H A and Thomas M E *J Amer med Ass* 1942 119 1001

[4] Brown G Friedfeld, L Kissin M, Modell, W and Sussman, R M *Ibid* p 1004

[5] DeGraff, A C and Nadler J E *Ibid* p 1006

[6] Thomson W A R. *Quart J Med.* 1937, 6, 321

[7] Fox T, Gold H. and Leon, J *Ibid*, 1942 119, 1497

[8] DeGraff, A C. and Lehman, R. A *J Amer med Ass* 1942, 119, 998

[9] *J Amer med Ass* 1942, 120 370 472

[10] *Brit med J* Oct 31, 1942, p. 524

The efficiency of the present technical staffs of the medical laboratories of this country is largely due to the efforts of the Pathological and Bacteriological Laboratory Assistants Association Lately a committee of the Association of Scientific Workers has been considering the training and future status of these essential workers in the medical field The PBLAA has applied for registration, under the name of the Institute of Medical Laboratory Technology, and is asking for statutory powers to organise and direct the training, examination and qualification of its members It has been suggested that a commission should be set up to consider the question of training, on which all interested bodies, including the IMLT (when established), the Pathological Society, the Association of Clinical Pathologists and the ASW should all be represented In the past the young technician has always been expected to spend a good part of his time as bottle-washer His training has depended upon opportunity, the goodwill of the senior technician and his own capacity to take advantage of whatever chances offered Sometimes one, sometimes another, and sometimes all three have been lacking Any scheme for the education of technicians should ensure that entrants have the capacity and desire to learn, and that they have the opportunity to use them Not all lads who may fancy laboratory work prove to be suited to it, and aptitude can only be determined by experiment, all entrants should serve a probationary period before undertaking the career of technician Bottle-washing as a preliminary test of aptitude is not to be despised—the lad whose presence is signalised by the crash of shattered glass-ware is obviously better directed elsewhere—but it should not be allowed to engulf so much of the accepted student's time that he has no opportunity to learn more skilled work The existing state of affairs in which the most recent entrant to the laboratory may find himself stuck indefinitely on the lowest rung of the ladder must be remedied

The ASW committee has made some suggestion about the age and stage of education at which the technology probationer should be accepted but this as yet seems scarcely necessary The school-leaving age must set the lower limit, in all towns possessing a laboratory fitted to take probationers there will almost certainly be a technical school at which they may attend evening classes in the needful subjects The probationary period should be limited, and at the end of it the student should have the opportunity of entering at once upon his training proper Not all medical laboratories offer teaching facilities appropriate to such training It can only properly be pursued in those offering considerable facilities for teaching, these are few and attached for the most part to universities, but it may be that with increase of laboratories as a part of a national hospital service others not necessarily attached to universities may be fitted to take on this work The student will have to learn the basic principles of chemistry, physics and biology, to the standard acquired by medical students in their preclinical years Some systematic instruction is essential, but it should not become a burden, though the laboratory technician must be sufficiently acquainted with the essentials of the sciences with which he deals to be able to understand what he really is doing, his work is primarily practical and he needs practical instruction in all the routine laboratory methods applied to general medicine The committee feel that an appropriate course could not be taken in less than two years by a student who had passed lation, but this may be setting the academic high, and might exclude practical technicians in of those who were merely good at their books examination conducted by the court of the IMLT qualify the student to take up a junior post in a la tory, 2 or 3 years of experience as a junior entitle him to attempt to sit for his final examination as a master of his craft The period in the training school might be too expensive for some likely candidates, but this difficulty could be overcome by a scheme of scholarships, bursaries or repayable grants in aid

To devise and put into effect a scheme of training for the technician is not a simple matter, but the provision of an adequate supply of properly trained medical laboratory technicians has national importance and the efforts of the ASW committee will command the fullest sympathy of those interested in the development of the national medical service

THE SAILOR NURSE

MEN who have trained for the sick-berth staff of the Royal Navy and retire after at least twenty years' service are at a disadvantage when it comes to finding a job in civil life Surgeon Rear-Admiral J Falconer Hall asked on their behalf in our columns [1] that they should be given a definite status in any new nursing act which might come into force He wrote as secretary of the Central Council of the Royal Naval Sick Berth Associations, a voluntary body formed by Naval medical officers to help these men to find work At the beginning of their training the men are entered on probation, only after a stiff medical and educational test During their first year they have a course of training and pass an examination for the rating of sick-berth attendant, if they fail they are discharged from training Later they take practical and written examinations for the ratings of leading sick-berth attendant and sick-berth petty officer The rating of petty officer is equivalent to that of a sergeant in the Army and cannot usually be obtained after less than 7 years' service The central council considers that these qualifications in no way fall short of those required for the certificate of state registration The men join for 12 years and may leave after serving that time, but most of them go on to complete the 22 years which qualifies them for a pension, and are then usually over 40 Nearly all of them hold the good conduct medal, which means that for 12 consecutive years they have had a "very good" report on their service certificate Their service is spent in Royal Naval hospitals at home and abroad and in ships all over the world, and they look after surgical, medical and mental cases They get experience with nearly every type of acute case and during training are instructed in the principles and practice of general nursing, first-aid, invalid cookery, disinfection, stretcher drill, and medical accounts and store-keeping They undertake the care of instruments and learn elementary dispensing Some specialise as masseurs, and are registered under the Chartered Society, others become radiographic, laboratory or theatre assistants The numbers adversely affected are not large about 50 leading sick-berth ratings are discharged annually and of these perhaps 30 will want to continue nursing Lacking the state qualification, however, they are debarred from all the better paid posts as male nurses in civil life, and cannot participate in the superannuation schemes of local authorities The General Nursing Council are powerless to help them because their hands are tied by the Nurses Registration Act State registration is the only recognised qualification for nurses in Great Britain, and the only portal of entry to it is through the state examination Men between 40 and 50, however, who have been practising as skilled nurses for many years, are not anxious to take more examinations,

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[1] *Lancet*, Nov 21, 1942, p 628

Special Articles

GENERAL MEDICAL COUNCIL

PRESIDENTIAL ADDRESS

OPENING on Tuesday the 156th session Mr H L EASON referred to the many changes in membership since the last meeting of the council Sir Norman Walker, who died on Nov 7, had been a member for 34 years of amazing activity His knowledge of the history of the council and of its minutes was unique There was no problem that he could not simplify by his familiarity with precedent and tradition, and he used his wisdom and judgment unceasingly for the benefit and the assistance of the council Prof David Waterston, who died on Sept 4, was remembered for his unfailing kindliness and modesty, his industry and his impressive knowledge of standing orders Prof Edw Fawcett, who died on Sept. 22, was a member of the council 1925–35, his expert knowledge was of the greatest value as visitor of examinations in biology Dr Leonard Kidd who died on Oct 2, had been the father of the council, with a distinguished record of public services in Ireland The retirement of Mr Harold Collinson to become inspector of qualifying examinations in surgery had brought Prof Matthew Stewart to represent the University of Leeds, his experience both in the applied sciences and in education will be of assistance to the council in these times Dr T S Hele was succeeded as representative of Cambridge University by Prof Roy Dean, himself no stranger to the council, for he had sat for Manchester 1919–22 Dr Kidd's place was taken by Dr Frank Kane professor of physiology in University College, Cork, and Prof W H Gilmour's by Dr Eric Wilfred Fish LDS

The President had little to say in advance about the business of the session The education and examination committees would jointly present a report on evidence prepared for the Board of Education's committee on curriculum and examinations in schools, and for the inter-departmental committee on medical schools In accordance with the council's decision in June an inspection had begun of qualifying examinations which had been accelerated as a matter of emergency The provisional appointment of inspectors by the executive committee was to be ratified At a suitable moment would be discussed the recommendations of the executive committee as to the arrangement of the sittings to the best advantage both of the public and of members

He has been asked said the President, to draw attention to the case of an alien, apparently unqualified, who by false pretences obtained a recommendation and testimonials from doctors for professional purposes Doctors should not accept unverified statements by other persons that they are qualified or registered, and aliens who are registered in the Medical Register, whether temporarily or otherwise should be in possession not only of a certificate of registration issued by the GMC (which is not evidence of identity), but of a police registration certificate endorsed with the conditions under which they are entitled to take up professional work, or accompanied by a Home Office letter setting out those conditions

The penal business before the council, he concluded, is likely to be difficult and possibly protracted

A SURGICAL QUORUM

WITH gratified astonishment SIR ALFRED WEBB-JOHNSON welcomed not only a quorum but a handsome surplus at the annual meeting on Nov 19 of the Royal College of Surgeons It showed, he said, a quickening of interest among fellows and members in the way their affairs were conducted by the council Time was when the annual meeting was a battleground for members seeking representation on the council, in these peaceful war-time days, with no immediate hope of changing charters, they could discuss the year's work in amity The Interdepartmental Committee now inquiring into medical schools and research would be likely, he felt, to cover a wide field, making in its stride recommendations, affecting the college, about examinations for diplomas and about the training of consultants The college is, he said, taking part in the work of the Medical Planning Commission; he mentioned the names of Mr John Hunter of King's and Mr Wilfrid Adams of Bristol in this connexion During the year some of the younger fellows had protested that they had not had full information when voting for members of council, this objection had received sympathetic consideration and the voting regulations were being modified to meet it He referred to the postponement (see *Lancet*, Nov 7, p 552) of the primary examination to the postgraduate years and the inclusion in it of pathology Entrance to the final fellowship had hitherto been governed by rules which operated somewhat unfavourably against overseas candidates Most of them cannot be admitted to the final examination, until four years after qualification and this causes some hardship by delaying their return to their own countries The council feels, he said, that this needs amending, and also that no candidate should be admitted to the final fellowship examination without a longer period of postgraduate training than is required at present Application had therefore been made for alteration in the by-laws so that conditions of admission can be changed as circumstances required He reminded the meeting that the onus of restoring the Hunterian Museum lay on practising surgeons, whom he asked to collect specimens During the year the Royal Eye Hospital had approached the college, suggesting that a research chair in ophthalmology should be founded The college had agreed, and would provide laboratory facilities, the hospital guaranteeing the salary and the professor being one of the surgeons to the hospital The appointment would be for five years in the first instance He mentioned the generous and timely gift by the American College of Surgeons of £2000 towards the restoration of the college The three Royal Colleges are working together through a standing joint committee, and a project might be put forward, he said, for them to unite in one building After all, there was nothing revolutionary in this concept, for medicine, surgery and obstetrics were all part of one whole; and many of the best physicians he knew were surgeons If in the forthcoming changes in medical organisation the consultant was to be paid from public funds, he must have accredited qualifications, and the central academic body deciding those qualifications should be formed by the three colleges

Mr R M HANDFIELD-JONES remarked that the lack of interest shown in the affairs of the college was a danger at this time when many bodies were planning for the future of medicine He thought, however, that the apathy was understandable if the administration of the college was compared with that of the Royal College of Physicians There all fellows were at liberty to attend the meetings of comitia and to give their views Though the surgeons charter would not permit of comparable meetings, he thought it would strengthen the hand of the council if informal open meetings were held at which they could learn the opinions and feelings of fellows Should the Interdepartmental Committee try to force unacceptable proposals on the college it would be of use to the council, in opposing these, to know that they had the fellows behind them He welcomed the idea of close coöperation between the colleges, but if they decided to share a building two of them would have to move Moreover, while it was easy to work together it was not always so easy to live together In any case he hoped the council was not contemplating giving up their historic site His proposal that the annual report should be adopted was seconded by Mr ERIC CROOK Mr. D H PATEY suggested that in the restored museum the emphasis should be on quality rather than—as of old—on quantity

The PRESIDENT in reply said that it would be hardly practicable to have meetings analogous to those of the comitia, since the fellows of the college numbered some 2700, as compared with some 700 fellows of the Royal College of Physicians In the council, the affection for the present site of the college, he said, was probably even stronger than among the rest of the fellows; in any case there was £100,000 promised in war damage which could not be transferred if the college moved to another site

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Messrs BRITISH DRUG HOUSES have now prepared a leaflet on the use of S methylisothiourea, the blood pressure raising drug investigated by Smirk (*Lancet*, Sept 12, 1942, p 301) It is issued in 2 c cm. ampoules containing a 10% solution of the sulphate for intravenous injection.

wear more clothes than to cut down ventilation On the other hand, since it is the air entangled in the mesh and between the layers of our clothes which prevents heat loss, we must prevent draughts or winds blowing this air away, if necessary by wearing waterproof (and therefore windproof) overclothes The American rationing authority will allow households with children under 4 years (and hence nursing mothers) supplementary fuel to provide a living-room temperature of 70° F , the advisory committee say that older children need a cooler and not a warmer environment than adults They would also allow an extra ration to households with one or more members over 65 (" some people are old at 55, others young at 70 "), leaving the doctor to decide the needs of invalids, but so far no extra allowance has been made for the aged A medical certificate for extra fuel must specify the approximate temperatures required which will puzzle the conscientious certifier The ration is based on past consumption and on the thermal efficiency of the house as indicated by a heat-loss floor-area formula But the American rationee has a pull over us, for if he converts his fuel-oil burner to coal he can be assured of all the heat he wants

FIBROSITIS, ORGANIC AND INORGANIC

THE condition referred to as fibrositis is still one of vague pathological and clinical definition , some sceptics deny its existence altogether, so that it is not surprising that the diagnosis has fallen into disrepute Ellman and others[1] have made a careful clinical and psychological study of 50 patients to whom this label had been loosely applied and found in only 54% definite physical findings —tender points giving rise to referred pain which could be abolished by procaine injection—significant focal sepsis, sacro-iliac strain, &c The remaining 46% showed no physical signs, and while the psychological analysis of the whole series revealed neurotic disorders in 70%, these were much more in evidence in the minor group without objective features Most of these suffered from hysteria of the histrionic, plaintive or resentful type, and a few from anxiety or depressive states , their complaints were of vague shifting pains unlike the localised symptoms of those with organic disease, and, in general, the degree of psychological upset was inversely proportional to the physical findings It was particularly noteworthy that even severe prolonged organic disease did not tend to lead to psychological abnormalities , neither seemed to be related to the other as an ætiological factor The mechanism by which a psychoneurosis gives rise to pain of this kind is not clear , Ellman and his colleagues suggest that repressed aggressiveness, a causal element in hysterical and anxiety states, results in muscular tension which is interpreted by the individual as pain and by the doctor as fibrositis This explanation may not appeal to the orthopædic surgeon, but it may persuade him to restrain his own aggressiveness towards these very trying patients and refer them gently to his psychiatric colleague

NATIONAL PHYSICAL LABORATORY TO HELP

SOME workers in X-ray departments still fear the possible effect on their health of prolonged exposure to radiation These fears, coming to the knowledge of the Minister of Health, have not been brushed aside by him as though they had no foundation in fact (circ 2718, 16 xi 42) He takes the frank attitude that " in a well-run X-ray department where proper precautions are taken, the risk to health is small " However small, it is not negligible, for we do not yet know what are the safe limits to which a man or woman can be exposed to X rays without suffering some harm A good idea of the dose taken during a working day can be obtained by carrying in the breast pocket a dental film which is and the tint compared with a colour series corresp to known doses of radiation This convenient reasonably accurate method has been in use at some hospitals over a period of years But there are no doubt other hospitals where such tests could not readily be done, and arrangements have been made with the National Physical Laboratory to organise a service for testing the amount of radiation received by X ray workers and to advise what further action, if any, should be taken in the light of the tests Should the film test show a dose approaching (or exceeding) the tolerance value laid down by the British X-Ray and Radium Protection Committee, the hospital authority should have the X-ray equipment tested by ionisation methods, and the worker's technique investigated Authorities making use of such services should note

(1) Application for films (one film per person) should be made to the Director, National Physical Laboratory, Teddington, Msx

(2) After exposure the films should be returned to the laboratory with a remittance of 2*s* per film to cover cost of report

(3) Should this report be unsatisfactory the laboratory will arrange for inspection of apparatus and technique, at a fee, for a department of normal size, of about £5

Where use is made of these services by an EMS hospital, the fee may be included in the periodical statement of running costs

DETERMINATION OF PLASMA PROTEINS

THE plasma proteins have come in for a lot of study in the last few years Whipple[1] and his colleagues in Rochester, N Y , have worked on their formation and metabolism, and lately Beattie and Collard[2] have brought forward evidence supporting their view that besides the protein circulating in the plasma there may be considerable stores in liver and other body cells and that exchanges between the circulating plasma and storage organs are relatively free Apart from such inquiries, determination of serum proteins has acquired a value in the assessment of nutritional status and in the treatment of disease There are, broadly speaking, two principles by which these determinations can be carried out The old-established chemical method consists in separating the proteins by suitable reagents and determining the total nitrogen in them This is by far the most reliable method and enables the albumin and globulin to be recorded separately , moreover, the latest modifications require very small quantities of material In late years, physical methods have been introduced , the specific gravity of serum depends mainly on the amount of protein in it, so that the percentage of proteins can be calculated from the specific gravity , in the best known method of the kind the time taken for a drop of serum to fall through a known height of some immiscible liquid is measured Though convenient and accurate enough for some purposes, these physical methods do not differentiate albumin and globulin Taylor and Gibbons[3] have lately recorded a rapid physical method, depending on whether a drop of serum floats or sinks in appropriate mixtures of xylene and bromobenzene The test, though crude, could be used at the bedside , and they suggest that it might be useful under Service conditions All methods, this one included, require the separation of the serum or plasma from the corpuscles as a preliminary step , and once this has been done there seems little reason why one of the more accurate and equally rapid physical methods should not be used in any hospital where laboratory facilities are available

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[1] Ellman, P , Savage, O A , Wittkower, E and Rodger, T F *Ann rheum Dis* 1942, 3, 1

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[1] Whipple, G H *Amer J med Sci* 1942, 203, 477 Madden, S C and Whipple, G H *Physiol Rev* 1940, 20, 194

[2] Beattie, J and Collard, H B *Brit med J* 1942, ii, 507

[3] Taylor, F W and Gibbons, M M *Ann Surg* 1942, 116, 426

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M P

THE discussion of amendments to the Address has been roceeding now for two weeks and will probably continue or another The amendments range over the control of unt, the opening of cinemas on Sunday, equal compensation for men and women for war injuries, the naval ar service, price control, Welsh affairs, the Atlantic harter, India and the Colonies, children's allowances, ocial inequalities, workmen's compensation and civil viation The chief amendment on health questions ut forward in the name of Prof A V Hill, FRS, most f the medical members of Parliament and many other nembers of all parties, regrets "that further provision s not made for reducing the delay in applying the stablished results of scientific and medical knowledge," nd mentions specifically venereal disease, tuberculosis nd diphtheria, together with the problems of factory ygiene and the health and nutrition of young people Unfortunately, despite the unusually long time available for discussion, the Speaker has decided not to select this mendment as one to be called, which would make a debate certain, and the whips have decided not to ask time to be allocated This is one of the penalties of independence, for Prof Hill is an "independent" Conservative, and an all-party motion is less interesting than one challenging a party conflict The new venereal disease regulations will however be the subject of debate, as Dr Summerskill, Mrs Hardie and Mr Driberg are moving a prayer that they be annulled Dr Summerskill thinks the regulations are not drastic enough and Mrs Hardie does not like them as they are

The last day of the debate last week was a patchy affair, two members talking about pensions appeal tribunals, Mr Clement Davies of the urgency of planning for the post-war world and the desperate need of not betraying the fighting men after this war if we are to avoid revolution, Mr Gallagher on the Second Front, other members on miscellaneous topics It was all wound up by Mr Ernest Brown, Minister of Health, dealing particularly with housing As the member for Evesham might say in a mood of under-statement, "not very satisfactory" But the day went like that, and those wanting to discuss Prof Hill's amendment were not called Frustration is a malady quite well known to MPs, especially to independent-minded MPs Debates of this kind put members' views on record in *Hansard*—and no doubt in the press in their own constituencies—but they do not achieve debating results although they make the opportunity for ministerial statements The previous day's debate was more useful because there was a clash of feeling and opinion You do not get light in the House as a rule unless you also engender heat The heat on this day was engendered by a further refusal of the Government to set up pensions appeal tribunals on the ground that the thirty or so doctors required could not be found Although Sir Stafford Cripps said this it was difficult to believe it; one member said Sir Stafford had an untrue brief provided for him and others made the scoffing noises known in parliamentary records as "interruptions" It is widely felt in all parties that the refusal to set up tribunals is a mistake There is a shortage of doctors, of course, but men are being found for rehabilitation work and for the Army and other Services and can, if the priority need is established, be found for the tribunals The most suitable men for tribunals are senior men, the Services are as anxious for youth in the medical branch as elsewhere, and there are many senior men unoccupied or, like a certain major-general AMS recently retired, filling appointments as MOs of Home Guard units This matter will come up again, and although now defeated the forces in favour of tribunals have only retreated to their Alamein line and are planning a new offensive

Sir Stafford Cripps's speech in winding up on the second day seemed to set narrow limits to post-war planning It gave no indication of "a promised land," as Mr Clem Davies said, although speeches by the right hon gentlemen at the Albert Hall spoke of "a land of promises" When the Labour Party's official amendment, dealing largely with post-war reconstruction, is debated next week there will be calls for clearer statements Many members turn with relief from the negative politics of our unified government to the strong appeals by Mr Roosevelt, Mr Wendell Willkie and other American leaders who see the need of building the foundations of the post-war world now This country has given and is now giving great leadership in war, but it is the USA and the USSR, fighting magnificently as they are, who give leadership in post-war politics Members of Parliament at Westminster would sometimes like to feel the wind of these wider political spaces

CENSUS OF DIPHTHERIA IMMUNISATION

A few days ago, in reply to a question in the House of Commons by Prof A V Hill, the Minister of Health gave recent figures showing the absolute number and (where possible) the proportion of children immunised against diphtheria in the different county boroughs at ages under 5 and at ages between 5 and 15 The total numbers, which are very striking, may be read in *Hansard* for Nov 10 (col 2283–86), and the percentage figures, which give the clue to success, are reproduced

PERCENTAGE OF CHILD POPULATION IMMUNISED AT JUNE 30, 1942

County Boroughs	Age under 5	Age 5–15
South Eastern Area		
East Ham	40	42
West Ham	33	10
Bournemouth	32	21
Brighton	17	47
Canterbury	28	63
Croydon	36	37
Eastbourne	27	33
Hastings	16	15
Oxford	26	60
Portsmouth	26	70
Southampton	32	54
Southend on Sea	11	26
Northern Area		
Barnsley	45	74
Barrow in Furness	35	65
Birkenhead	13	51
Blackburn	19	73
Blackpool	27	65
Bolton	18	47
Bootle	11	59
Bradford	50	50
Burnley	18	25
Bury	22	43
Carlisle	27	71
Chester	19	66
Darlington	25	25
Dewsbury	16	32
Doncaster	20	47
Gateshead	15	53
Halifax	16	25
Huddersfield	40	60
Kingston upon Hull	6	36
Leeds	27	65
Liverpool	12	41
Manchester	26	67
Middlesbrough	17	65
Newcastle on Tyne	47	64
Oldham	31	75
Preston	20	30
Rochdale	25	18
Rotherham	20	35
St Helens	26	49
Salford	13	51
Sheffield	22	20
Southport	30	64
South Shields	32	66
Stockport	35	61
Sunderland	18	19
Tynemouth	33	73
Wakefield	28	39
Wallasey	16	44
Warrington	23	68
West Hartlepool	17	55
York	38	35
Midland Area		
Birmingham	53	57
Bristol	16	48
Burton-on-Trent	30	57
Coventry	32	56
Derby	29	58
Dudley	34	89
Gloucester	28	41
Leicester	44	38
Northampton	20	60
Nottingham	26	76
Smethwick	37	51
Stoke on-Trent	18	46
Walsall	17	53
West Bromwich	20	48
Wolverhampton	24	60
Worcester	13	46
Eastern Area		
Gt Yarmouth	25	77
Grimsby	30	60
Ipswich	17	40
Lincoln	31	57
Norwich	16	40
South Western Area		
Bath	25	23
Exeter	46	77
Plymouth	30	52

AVERAGE PERCENTAGES FOR CERTAIN AREAS

Area	No of towns	Preschool	School
South Eastern	12	27	42
Lancaster	16	22	56
Yorkshire	13	28	44
Midland	16	27	55
Eastern	5	23	55
South Western	3	34	51

Continued from previous page

breath whenever he exerted himself or walked uphill The coroner asked the son, a heavy dull farm labourer, if this were true He was silent for a time and then said, "Noa" "What," rejoined the coroner, "never short of breath after exertion or walking uphill?" "Noa, he was *never* short of breath but he would puff and blow a hell of a lot"

In England Now

A Running Commentary by Peripatetic Correspondents

ALTHOUGH hair is obviously a most important organ, at any rate in women, it is completely unnoticed in all physiological textbooks. Perhaps one day a hirsute woman doctor or a bald consultant will study the subject seriously. I am often saddened by the sight of hairy women who vary between the presentable girl who has noticed a slight down on her upper lip to the masculine-looking woman with a full black beard like the pictures of the notables of the Victorian era. They all think it is glands and I dare say that most of them are right. Some of the surgeons think that they can do quite a lot about it but I once met a woman who used to perform electrolysis on the faces of Sir Harley Wimpole's patients because they said they could not bear to go back and tell him they were no better. My advice to them is to shave and they are all of them shocked at this suggestion. All women believe that shaving encourages hair growth. The fact is that hairs grow to a certain length and then drop out. If they are cut off at the skin level they appear at first to have been stimulated because they are prickly. Even if this were true it seems to me that it would be better for these unfortunate women to shave frequently rather than go about with beards, but very few of them will agree. I once shaved one of my legs every day for a month so as to make quite sure. When first the hair grew it seemed coarser and more prickly, but now, some years afterwards, I cannot remember which leg I shaved and it is impossible to tell by looking at them. If the radio doctor could be persuaded to use these experiments as propaganda the world would be a more beautiful place.

* * *

I wonder how many girls in that school in Belgium Charlotte Bronte infected with tubercle, and if that particular strain was more stimulating to the imagination than most. Perhaps it is still flourishing in some of our writers—H. G. Wells for instance, whose autobiography tells of repeated hæmoptyses. Commercial possibilities there. "Mixed Haworth Tuberculin for Novelists", "Try our H. G. W. injections for inventors, recovered by our own investigators and made in our own laboratories." I wonder how far bacterial toxins do act as mental inflamers—or I suppose the right way of putting it is, when the brain acts defensively against toxins, to what extent do they give rise to strange picture-thoughts? The depression after flu, for instance, is really the body, advised by the toxin, saying "I'm not fit, I'm vulnerable, I'm going to lie low." If it does go on to paint pictures of coffins, corpses, and one's latter end, well, that's just too bad.

I wonder how long the organisms of our intestines which we now regard as symbiotic have really been so. Even now under certain conditions some of them are ready to go back to the short-sighted policy of attacking their host. Damn them, why can't they read Kropotkin! From the large number of immunes and carriers I suppose the diphtheria bacillus is becoming symbiotic and perhaps wholesale immunisation will hasten the process. I have a sneaking suspicion that your perfectly healthy man according to modern ideas, Grade A, bacteria free except for the symbiotics, might be good at ploughing and plodding, and that's about all. From the bacterial point of view the fittest man is the one who is immune to or on terms of symbiosis with the greatest number of organisms. Of course, our rufulous politicians haven't the scientific education to begin to think out these problems. They are still in the conceited Homo sapiens stage. They think Mr Morrison is a great minister, whereas in fact it is Mr Morrison + *B. coli anti-communist* + *B. backchatia* + the antibodies to the alkaloids of tobacco and gingerbeer + Unc. Tom Cob et al. which is a great minister. They ought to do what I've done for the last three days—get flu, go to bed with the Brontes, counter the depression with a glass or two of rum, and try to think.

* * *

Insufficient attention, both by examiners and the general medical public, has been paid to the theory of Little Men. It is only mine by acquisition. The first time I heard it produced was in a seafood parlor in New Haven, Connecticut, when a young American student confided to me that gastric ulcers were by a lot of little men with picks. Since then workers have produced new suggestions; it was medical registrar who pointed out that Laocoon was study of Little Men wrestling with spirochætes, and fellow-student who suggested that flatus was due to whole lot of Little Men testing the contents of the bowel with Kipp apparatuses. The theory actually has no limits. How does the pituitary know the ovum been fertilised in the fallopian tubes? There is a long chain of Little Men and they shout to one another along the echoing vessels of the body. "She's got it!" they shout, and the wise Little Men of the pituitary pull levers and keep the endometrium receptive. And then there are the eager Little Men from the thyroid, so anxious to see the view that they crowd forward in the eyeball and produce exophthalmos. Or the drunken Little Men of chronic gastritis, which they produce by their mad Bacchanal cavortings over the rugæ. You can think of some others for yourself, but don't try them on the examiners. As usual, they are behind the times; their cortical Little Men are all bound up in red tape and textbooks, reluctant to exchange a new idea on their Little Telephones.

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Now that this war has got into its stride one's car more and more becomes a receptacle for a diversity of creatures and things. I don't object to the creatures: the Servicemen and women on leave who have missed the last bus, the farmwife returning from the town heavily laden with her shopping basket, the evacuees who scrounge lifts to and from school whenever they can and line the running boards if there is no room inside, the goslings, the young pullets or even the nanny goats who from time to time have to be taken along to visit their boy-friend up the road. It is the miscellany of inanimate objects liable to be encountered unexpectedly in the back of the car that makes one fear for the shape of things to come; the week's groceries, for example, dumped in beside a couple of placentæ wrapped in newspaper which I collect for a colleague morbidly interested in such things; the crate of empty bottles to be taken down and replenished with thin beer at the local off-licence (terms strictly cash), the housemaid's shoes which have been repaired by the cobbler next door to the surgery ("doctor won't mind takin' 'em, I'm sure"), the flasket containing the soiled linen which has to be taken down every Friday and swapped for the clean; the shotgun and cartridge-belt (just in case we have half an hour to spare, you know), the vast bin containing pregnancy-urine—a valuable source of APL (whatever that may be)—which I salvage for a chemist; a couple of turnips from a grateful patient—all these and more, to say nothing of one's ordinary stock-in-trade. The other day on opening my accident-bag I scattered a shower of grain upon the floor. Heaven knows how it got there. "Oats, by Jove!" said my patient, "not wild ones, doctor, I trust?" Facetious ass.

* * *

It's all rot (said my friend the ship's adjutant) that when a ship is torpedoed and sinks she sucks you under if you can't get clear. What you have to look out for is things like pianos coming up quick and hitting you hard on the bottom. Very painful they can be, I'm told. My O.C. troops is always worrying about his pension. Keeps me up till two in the morning going through orders about procedure in the event of the ship being torpedoed just to make certain he's covered. But the other night he had a bright idea. "Why, ol' boy," he said, "if the ship sinks you and I and the captain have to go down with her. We're sure to be drowned so there's no need to worry whether I'm covered or not!"

* * *

A man dropped dead in the front garden of his cottage after walking home from work. The last part of his journey had been up a steep hill. The post-mortem examination showed a very large myocardial scar and advanced degeneration of his coronary arteries, one of which was thrombosed. At the inquest, I said that I doubted the statement made by one of the witnesses that he had been in perfect health till he died so suddenly, for I felt sure he must have suffered from shortness of

Continued at foot of opposite page

Letters to the Editor

DOSAGE OF VITAMIN D

SIR,—There is a mis-statement in Miss Morrison's letter of Nov 14 on rickets in the breast-fed infant She says, " If cod-liver oil is used, then the Government compound is to be chosen since much less need be given " The Government cod-liver oil contains no more vitamin D than the ordinary cod-liver oil with which we are familiar, it is referred to as cod-liver oil compound because the strength is kept constant (100 units vitamin D per gramme) by the addition of arachis oil where necessary It is hardly surprising that this mistake is made, it is being made all over the country The reasons for this are (1) that the dosage is so small (5 drops up to ¼ teaspoon twice a day in the first six months), (2) that the product is referred to as a " compound " The effect of recommending these very small doses and calling the oil by the name of compound is well seen in Miss Morrison's letter, she assumes (and who would not?) that the oil has been reinforced by the addition of a concentrate or high potency oil

The special subcommittee of the British Pædiatric Association, which recently considered vitamin D dosage in infancy, recommended 700 units daily as a safe dose for most babies during the first year (see *Lancet*, Oct 17, 1942, p 460) About 700 units of vitamin D can be obtained from—

4 minims or 8 drops of ' Radiostoleum ' (BDH)
5 minims or 10 drops of halibut liver oil (Crookes)
6 minims or 12 drops of ' Adexolin ' (Glaxo)
140 minims or 280 drops (about 2 teaspoons) of cod liver oil, or cod liver oil compound
280 minims or 560 drops (4 teaspoons) of 50% emulsion of cod liver oil

It will be found that most of the manufacturers' droppers deliver ½ minim

If the Government reinforces the compound, as the subcommittee suggests, so that a teaspoonful contains 700 units of vitamin D, endless trouble and confusion will be saved

Finchley　CECILE ASHER

TRACE ELEMENTS

SIR,—The Nutrition Society meeting must have given the impression to those who attended it, and also to those who only read your careful report of Nov 7, that the trace elements are of little importance in medicine But enough is in fact known of their physiological action to justify their clinical use For instance, manganese is intimately associated with vitamin B_1, a quantitative relationship between the two being necessary, at least in the rat, for their proper utilisation by the body (Perla, D, et al *Proc Soc exp Biol N Y* 1939, 42, 368) E Hamamoto (*Orient J Dis Infants*, 1935, 18 37) found the manganese in the livers of children dying from beriberi was half that of children dying from other conditions Phosphatase formation and bone metabolism is also related to manganese (Combs, G F, et al *J Nutrit* 1942, 23, 131) Zinc is reported by W G E Eggleton (*Biochem J* 1939, 33, 403) to be reduced in the epidermal structures in beriberi, and the fundamental necessity for this element and copper in metabolism is pointed out in your report of the Nutrition Society meeting

A dietetic deficiency of the trace elements in man—as was suggested by R McCarrison (*Ind J med Res* 1927, 14, 641) for manganese—probably occurs, since, apart from the findings in beriberi, the distribution of zinc and manganese in foods largely follows that of the vitamin-B complex Indeed, it has been thought that some of the symptoms of a vitamin-B deficiency are really due to a deficiency of the trace elements This would explain why in the treatment of beriberi foods rich in the vitamin-B complex, and so in the trace elements, are necessary in addition to the specific vitamins Quicker recoveries might follow giving the trace elements themselves The present habit of giving large doses of synthetic members of the vitamin-B complex, instead of wheat germ or yeast which contain also trace elements, may cause a relative deficiency of the trace elements necessary for the metabolism of the vitamin-B complex This relative deficiency may be an important factor in limiting the effect of increasing the dose of synthetic vitamins Therefore it would seem reasonable to give a mixture containing zinc, manganese and copper whenever synthetic vitamins are being prescribed My own impression is that such a mixture is of value

Wimpole Street, W 1　FRANKLIN BICKNELL

CONTROL OF VENEREAL DISEASE

SIR,—On April 28th last, as your Parliamentary Intelligence testifies, I asked the Minister of Health " whether, in view of the rise in the incidence of venereal diseases and the danger of dissemination of these diseases in the Armed Services from sources outside the control of commanding officers, a recent instance of which has been furnished to him, he will grant powers to medical officers of health to have persons of both sexes, who are suspected as being sources of infection, examined and, if necessary, treated " My question was prompted by a visit from a constituent, a young surgeon squadron-leader, medical officer to a certain Air station where, in the previous few weeks, thirteen cases of infection with syphilis in the unit were brought to his notice, all of which were traced to a single source This officer came to see me at the House with his close friend, my son, the late Flying Officer E B Graham-Little, killed on active service six weeks later It happened at the time of this visit that there were two other medical members of Parliament within call and we enlisted their advice in actually framing the question, it was, indeed, at their suggestion that examination of both sexes was insisted upon so as to avoid any opposition on the ground of sex differentiation The Minister replied " I am considering what action can most appropriately be taken to deal with the problem to which my hon friend refers "

I received some friendly admonitions, as no doubt the Minister also has done, that it would be undesirable to discuss on the floor of the House the provisions to meet this position and the expedient now adopted by the Minister of making use of Defence Regulation 33b avoids this stumbling-block I think the Minister has acted wisely in postponing, at any rate for the present, notification, but I think this may become necessary to meet more effectually this very serious cause of disturbance of the war effort Although the rise in the incidence of syphilitic infection, for which alone of venereal diseases the figures were given in the recent report by the Minister of Health, has been much greater in the Services than in the civilian population, there is evidence to show that the infection is gravely hampering the industrial war effort It is to be hoped that the medical profession will give its wholehearted support to the Minister of Health

House of Commons　E GRAHAM-LITTLE

REHABILITATION v SICK PAY RULES

SIR,—Now that rehabilitation is receiving so much attention it seems odd that the rules of some friendly societies and the interpretation placed on them by some of their members should pass unchallenged Some societies, of course, have framed their rules quite sensibly, but in some a sick member is forbidden to perform any labour, and the interpretation given to this is sometimes so strict that a convalescent cannot even pull up a weed in his allotment without running the risk of being reported by a fellow member and of being penalised One big society, for example, has a rule for its members on sick pay which reads as follows

> " Any member who　shall be found gambling, or in a state of intoxication, or performing any labour, or transacting any business for profit of any kind whatsoever, or indulging in any sport likely to retard his recovery, may be *fined a sum* not exceeding 10*s* for the first offence, and for the second and each subsequent offence, a sum not exceeding 20*s*, and he shall receive no further sick benefit until such fine has *been paid* "

One of its members who is ordinarily my patient has recently been attending a hospital for many weeks for massage and exercises, following an accident to a shoulder, and he has been docked of part of his sick pay because he was seen punting himself across the river

Of course it is important to have rules to prevent absenteeism and the abuse of sick pay, but it should not be difficult to frame those rules so as to give a reasonable latitude to the convalescent It may be less easy however to educate the members of these societies, and to make them see the importance of suitable occupation in

TOP SCORES

Town	Preschool	School	Town	School
Birmingham	53		Dudley	89
Bradford	50		Oldham	78
Newcastle	47		Gt Yarmouth	77
Exeter	46	77	Nottingham	76
Barnsley	45	74	Blackburn	73
Leicester	44		Tynemouth	73
East Ham	40		Carlisle	71
Huddersfield	40		Portsmouth	70

below The estimates were made by the authorities themselves (Reading and Wigan were able only to give totals) Mr Brown remarked that present circumstances, in particular abnormal movements of population, do not permit of statistical calculation of the ratio of the number immunised to the total population But we have taken the liberty of rearranging the table in conformation with the areas of the country used by the Registrar-General in his *Weekly Summary*, and of adding a brief summary

QUESTION TIME

Beveridge Report

In answer to a question Sir **Stafford Cripps** stated that it was anticipated that Sir William Beveridge's report would be published at the end of November

Rushcliffe Committee

Mr E **Brown**, replying to a question, said that the last nominations for the Rushcliffe Committee were received early in November, 1941 Approximately eight meetings of the full committee have been held, fifteen meetings of the employers panel and twelve meetings of the nurses panel Many of the meetings have extended over more than one day In answer to a question on Nov 10 Mr Brown announced that Lord Rushcliffe hoped it would be possible to submit a first report early next year

Lung Disease among Miners

Sir **William Jenkins** asked the Home Secretary what action he had taken to implement the report of the Medical Research Council into lung diseases among coalminers in South Wales, if he was aware that the disease was on the increase, and would he take steps forthwith as the matter was vital for the mining industry —Mr H **Morrison** replied The Minister of Fuel and Power and I are fully alive to the urgency of this matter and are anxious to deal with it at the earliest date possible Consultations with a view to securing agreement have been in progress with the representative bodies concerned, but are not yet complete

NHI Capitation Fees

Sir **Leonard Lyle** asked the Minister of Health whether he was aware that since the start of the war the general body of insurance practitioners had tried to secure an increase in the capitation fees adequate to enable them to meet the extra cost of war time conditions and the increased work involved, the increase suggested being 2*s* of which only 9*d* was approved, and whether he had reached a decision on the direct representations made to him on this subject by the Insurance Acts Committee of the British Medical Association —Mr **Brown** replied I agreed that from the beginning of this year the capitation fee should be increased from 9*s* to 9*s* 9*d* a year to meet the increase in practice expenses and the loss of private fees from the new class of insured persons. I have considered the request made this year for a further increase and on Oct 17 I informed the committee that I was not able to accede to this request

Nutritional Anæmia

Dr E **Summerskill** asked the Minister whether he had had brought to his notice any evidence of nutritional anæmia in women and children —Mr **Brown** replied My attention has been called to an article in the medical press which stated that evidence of nutritional anæmia had been found amongst certain groups of women and young children I have therefore arranged for iron preparations to be available in all day and residential nurseries and in energency maternity homes the majority of welfare authorities already provide similar preparations at their centres for expectant mothers and young children found to require them

Restriction on Clinical Records

Dr H. B **Morgan** asked the Minister whether he was aware of the growing practice in local authority institutions of the medical officer of health prohibiting the publication of the record of clinical cases or new methods of treatment by medical officers of institutions, under what statutory or other powers local authorities or their medical officers of health did this, whether such restrictions were mentioned in the terms of appointment of such institutions, and whether this restriction on medical publication of observations or new treatment was approved of by the Ministry —Mr **Brown** replied The reply to the first part of the question is no but I shall be glad to consider any particular cases sent to me

Venereal Disease

Mr T E **Groves** asked the Minister whether, in the interests of the general health of the community, he would, in order to minimise the withholding of information concerning venereal disease, confer with the Service departments upon the undesirability of causing any member of the armed forces to lose proficiency or any pay, especially as the armed forces are principally composed of persons withdrawn compulsorily from civil life —Mr **Brown** replied The issue in question is one for the decision of the Service departments to whom I am communicating the suggestion

National Ambulance Service

Mr **Groves** asked the Minister if he had considered the proposal, made to him by the Medical Practitioners Union, that there should be a national ambulance service somewhat analogous to the National Fire Service, and, as its adoption would tend to efficiency, particularly during an emergency, what decision had been reached on the matter —Mr **Brown** replied A reply to the union's proposal was sent on Oct 6, explaining that the consideration of ambulance services is one of the matters included in the surveys of hospitals which are now being made in connexion with the Government's postwar policy During the war the needs are met by the large expansion of the peace time ambulance service represented by the civil defence ambulances, the interhospital ambulances used under the Emergency Hospital Scheme, and the American Ambulance in Great Britain, all of which are coordinated on a regional basis

Oatmeal in the National Loaf

Mr W **Mabane**, parliamentary secretary to the Ministry of Food, informed Mr R **Boothby** that it was proposed to include a proportion of oatmeal flour in the national loaf

TRYPANOSOMIASIS ON THE RUN

Sleeping sickness, on the Gold Coast, was responsible last year for 172 deaths—that is, for 7 3% of the total deaths recorded [1] It is thus a killing disease third only to pulmonary tuberculosis and diseases of early infancy The total number of cases are on the whole fewer, though the trypanosome has made advances in some districts Thus 4332 cases were treated as compared with 5676 in 1940, but increases were noted in 5 stations Surveys of wide areas have been made, and the Kamba Valley was surveyed twice The first of these two surveys showed a falling incidence, the second survey had covered 51 villages at the time of publication and further falls in incidence were found in 29, 14 had the same rate in both surveys, and 7 had an increased rate A clearance and resettlement plan is being followed in the Kamba region, and progressed actively during the dry season, 67 miles of riverside bush have now been cleared and the medical entomologist reports that tsetse flies have been much reduced in the middle reaches of the river *Glossina palpalis* has been almost eliminated and *G tachinoides* reduced so that only one or two flies a week are caught Before clearing, the fly-catching team of four boys caught 300–500 of both species weekly During the year *G morsitans* has come under suspicion of transmitting human trypanosomiasis under natural conditions on the Gold Coast This variety of tsetse fly will be closely watched

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[1] Report on the Medical Department of the Gold Coast *Colony* for 1941 Crown Agents for the Colonies, 4 Millbank, London, S W 1 1*s*

Extension of EMS Vocational Training Scheme —The Minister of Labour has now arranged that under this scheme disabled people may be trained at certain technical colleges belonging to local education organisations as well as at Government training centres Specialist opinion and treatment will also be available for patients attending the educational centres, and the Minister of Health has issued a list of the technical colleges concerned and the hospitals to which cases from them will be referred (Circular 2549A) he held a combatant commission in the territorial army and up to 1915 commanded the Kent heavy battery and ammunition column But in 1915 he received a temporary commission in the RAMC and for his services he was twice mentioned in dispatches and in 1917 awarded the DSO Later with the rank of lieut.-colonel he commanded the County of London field ambulance and from 1921 to 1923 he was superintendent of the Ministry of Pensions hospital at Orpington The Harveian Society of London elected him president in 1933 Colonel Gowlland married Mary Florence Alexander and their twin sons are now both commanders in the Royal Navy.

Infectious Disease in England and Wales

WEEK ENDED NOV 14

Notifications —The following cases of infectious disease were notified during the week: smallpox, 0, scarlet fever, 2880; whooping-cough, 1155, diphtheria, 940, paratyphoid, 3, typhoid, 13; measles (excluding rubella), 7731 pneumonia (primary or influenzal), 556, puerperal pyrexia 153, cerebrospinal fever, 50, poliomyelitis, 16. polio-encephalitis, 0; encephalitis lethargica, 2, dysentery, 148, ophthalmia neonatorum, 83 *No case of cholera, plague or typhus fever was notified during the week.*

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Nov 11 was 1778, including scarlet fever, 668 diphtheria 265 measles, 194 whooping-cough 147 enteritis 78 ; chicken-pox 43 erysipelas 36 mumps 21, poliomyelitis, 6, dysentery, 53, cerebrospinal fever, 5 puerperal sepsis, 16, enteric fever, 3

Deaths —In 126 great towns there were no deaths from scarlet fever, 1 (0) from an enteric fever, 7 (0) from measles, 4 (0) from whooping-cough. 17 (1) from diphtheria, 66 (10) from diarrhœa and enteritis under two years, and 22 (1) from influenza The figures in parentheses are those from London itself

Rotherham reported the fatal case of enteric fever Willesden had 9 deaths from diarrhœa Birmingham 6 and Manchester 4

The number of stillbirths notified during the week was 208 (corresponding to a rate of 39 per thousand total births), including 24 in London

SMALLPOX IN SCOTLAND

By Nov 20 twenty cases of smallpox had been confirmed in Edinburgh In addition isolated cases have been confirmed in Tranent (one fatal case), Earlston, and Cowdenbeath So far all the patients, except one (a 17-year-old girl whose home is in Edinburgh), have had association with the Edinburgh Royal Infirmary or its convalescent home, but how the infection was introduced into these institutions has not yet been determined It is thought likely, however, that the source of the outbreak was an undetected, mild, ambulant case possibly connected with the recent outbreak at Methilhill in Fife

Vaccination has been available at first-aid posts at three daily sessions, and about 250,000 people have been vaccinated including 35,000 by general practitioners in their own surgeries, and 38,000 in institutions and public works . In Cowdenbeath about 10 000 of the 13,000 inhabitants have been vaccinated either now or during the recent Methilhill outbreak. One suspected case has been admitted to hospital for observation in Perth but as yet general vaccination there has not been recommended A major difficulty has been that many of the cases have presented atypical features Some of the rashes have closely resembled that of chickenpox and in a few cases mild acne and papular urticaria have been simulated

TYPHUS IN EIRE

Thirteen cases of typhus with one death have been reported from a coastal area of co Galway

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RECRUITMENT OF DOCTORS —To avoid unnecessary travelling it has now been arranged that male medical hospital staffs who are of military age will be medically examined at selected EMS hospitals by a senior member of the staff. But since the decision of unfitness for service must rest with the War Office the Army Council will arrange for the re-examination of a doctor who is not passed by the civilian examiner before he is officially rejected. A doctor who is passed at the civilian examination will not be further examined on behalf of the War Office until he is nominated for a commission.

Notes and News

NORSE DOCTORS

THE Royal Norwegian Government has brought out a little book (*Norway A Handbook* London · J M Dent and Sons) to tell us how our ally is still bearing a part in the war It sets out besides many fascinating things about Norway its countryside, its people and its history Among these is a little paragraph telling how, without consulting Dr Gjessing, the chief physician and director, the Home Office of the puppet government appointed a national socialist to be head attendant at the Dikemark Mental Hospital Dr Gjessing protested, demanding that appointments should be made on professional, not political grounds Then, one day in April, while he was performing an operation a Hird troop broke into the hospital and carried him off The medical organisations of the country demanded his release and full redress on threat of leaving their posts They carried their point and by June 25, the date they had set, Dr Gjessing was back at work This small incident in our own profession is an example of the way Norwegians are holding their own against the Nazi code This is what one would expect from our experience of how bravely Norse medicine is taking its exile in our northern shires, and bearing out the memories of *Feats on the Fjords* so zestfully read in our youth

MORE THAN A MILLION

IN spite of war and war damage, increasing shortage of domestic equipment and staff, the Cecil Houses still offer for a shilling a night bed, bath. tea and bread and butter and facilities for the washing of clothes to women in London who need them Cots for babies cost 3*d* The fourteenth report tells of more than a million beds and cots let to homeless wanderers of the streets since the first house was opened in the slums of Holborn Lately Service girls on leave have found a welcome at the Cecil Houses Three houses are in action and all are open to visitors from 3 30 to 5 PM on Thursdays. In normal times, after the initial expenditure, all the houses are self-supporting, but these are not normal times Clothing is an especially useful gift just now Those who would like to help should write to Mrs Cecil Chesterton, 193, Gower Street. London N W 1

MOBILE FRIENDS

OFFICIAL relief agencies in a war have not the free-lance range of voluntary bodies, especially when these run on wheels The Friends Ambulance Unit[1] is an example of a highly developed mobile organism with tropism towards any acute need Is there a blitz on Coventry, are supplies hung up on the Burma Road do 5000 Chinese in Assam need medical care, have refugees brought cholera from Lashio, could a mobile theatre save lives in the Libyan desert, are village children in Syria going blind from trachoma, does the Emperor Haile Selassie ask help in Ethiopia, must Indians be prepared for raids ? These are just the situations which exert an irresistible attraction for the FAU The motile freely-swimming organism hurries to the spot, waving its wild tail and soon there are young men working hard in hospitals in blitzed areas running a transport service on the Burma Road (where they repair ramshackle trucks and teach internal combustion engines to run on charcoal fumes instead of petrol), contriving and equipping mobile operating theatres, founding a hospital in the jungle almost from scratch, collecting and treating Chinese wounded, checking cholera by treating the sick and inoculating the healthy, helping the surgeon while he is operating in a Libyan mobile unit for 33 days out of 42, feeding 300 Syrian babies on dried milk from America, and beginning a pioneer health service in Ethiopia Women are helping too, planning emergency measures in blitzed towns on lines which can develop into long-term social work, and organising ARP in India These young people are trained for their work During a preliminary eight weeks of camp life they learn first-aid emergency nursing, anti-gas measures field ambulance work and sanitation stretcher drill and fire-fighting, and they take a course of physical training. Those who enter hospital work may hastening recovery The present state of affairs which encourages idleness of mind and body seems calculated to retard it

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[1] Third report, October, 1941-September 1942

Eton W H W ATTLEE

MIGRATION OF FOREIGN BODIES

SIR,—Prof Lambert Rogers's interesting paper recalls an experience of some twenty years ago A middle-aged man presented himself with a red, slightly tender swelling the size of a hazel nut in the skin of the abdominal wall in the neighbourhood of McBurney's point A dark object could be seen projecting through a tiny orifice at the apex of the swelling, and traction with forceps produced a blue-black feather, corresponding in size and shape with what a fly-fisherman would call a large spade hackle The Keeper of Birds at the Natural History Museum pronounced it to be the feather of a species of pigeon, and on cross-examination the patient confessed to a fondness for pigeon pie I feel that in view of the softness of the quill one can rule out penetration of the skin from without The absence of any symptoms is against the transperitoneal route and the point of exit is far from any subperitoneal track

Bideford M W LITTLEWOOD

JAUNDICE AND URTICARIA

SIR,—In your leading article of Oct 31, you commented on the occurrence of jaundice in US Army personnel following inoculation with yellow fever vaccine and mentioned as a point of note the presence of urticaria in about 20% of the cases, a condition which you state is hardly ever seen in ordinary infective hepatitis In May of this year I saw fourteen cases of jaundice in young adults who had had a prophylactic dose of mumps convalescent plasma about two months previously Four of the cases had urticaria as a prominent feature; in fact, two had been admitted to a skin ward on account of urticaria, the jaundice being overlooked Suspecting the plasma as the causative agent, I reported this outbreak to the Harvard Field Hospital unit for investigation, and no doubt the findings of the investigation will be published in due course

Poole GEORGE CHESNEY

POPULATION DECLINE

SIR,—Your review of *Parents Revolt* asserts that not every one will immediately share the alarm and despondency of Richard and Kathleen Titmuss at their discovery "that the one-child family has come to be the thing" Certainly our own profession has shown its approval of that institution, for we marry well above thirty and the average size of our families is well below two A few of us help on the good cause by charging exorbitant fees for confinements, while others give healthy mothers the impression that they have been foolish in having a fourth or fifth child The overloading of the book with statistics of which you complain may help us face up to unpleasant truths—rather like Churchill's prewar speeches The Titmusses, sez you, want England to have more children than the land (or Empire?) can support I suppose your blood boils to think of the overpopulation of Australia, Canada and the rest, all of them so prudently limiting their population And yet I had thought of Titmuss as the champion of parents with small means, rather like (do you remember?) your own *Aylesbury Broadside* of 1940 One thing, however, the advocates of population decline can fairly claim they did encourage the Nazis to believe that we were degenerate enough in 1939 to be attacked with impunity (look at their flaming headlines "Englands brennende Frage"), instead of letting them wait another twenty years, when we should not have had the man-power to resist them Let us then at all costs keep up our comforts, for, no doubt, the unborn babies' standard of living is much higher in heaven than in the 4- or 5-child family of the comfortably off, necessary even to keep our population stationary And with our new-found knowledge of chemical contraceptives let us slide into a beautiful national euthanasia Did not a recent writer in the *Economist* say we are fortunate in having Ireland so handy as a future reservoir of population? On with winning the war for them and for the others who will take the place of our unborn children!

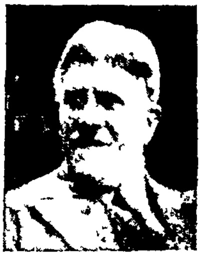
A REVOLTING PARENT

Aylesbury

Obituary

JOHN ORLANDO SUMMERHAYES

D S O, M R C S, LIEUT-COLONEL, R A M C (T)



J O Summerhayes was a remarkable doer but no advertiser Born in 1869, the son of Dr William Summerhayes of Ramsey, I of M, he was educated at Yarmouth Grammar School and qualified from St. Mary's Hospital in 1891 Soon afterwards he and his wife were sent by the Church Missionary Society to the North West Frontier, where cholera and typhus epidemics brought him into close contact with the Indians The admiration which they conceived for him later made easier his work of starting and enlarging dispensaries and an eye hospital, and to-day his friends there still ask, "When is Sumrez Sahib coming back?" Summerhayes was without fear, and when a ghazi, who happily had not a magazine rifle, had mortally wounded an Englishman at Mutch station, J O secured a sword from somewhere, cut down the fanatic with a deep neck wound and then patched him up long enough to secure summary trial and hanging next day He earned his DSO in the last war by his nightly expeditions to bring in the wounded, for the men of the Oxford and Bucks Regiment would not rest content till the CO's recommendation had been accepted After the armistice he was sent to Germany and Austria, seeking out prisoners of war and sending them home Accompanied only by his batman, he reached the beleaguered and famished Austrian royal family and the cry went round that the English had arrived—only two but enough Disregarding the revolutionaries, he shot enough stags for the needs of the party Then a lady of the court sewed a belt with precious contents round him and he set out to bring the delicate Crown Prince and these valuables to Switzerland The main roads were guarded and he had to cross the frontier by little-used ways, but in the end he handed over the prince safely and had the belt unstitched before witnesses

Even after his return to the humdrum life of a GP, first at Thame and later at Newhaven, the unexpected was apt to come out, as when he poked his stick through the window of a patient who needed fresh air and was not getting it At Newhaven he gave of his best to a great panel practice which he had built up, and for the last three years he was also local senior MO of the RAMC, till grave illness led to a serious operation in London, where he died on Oct 28 A fellow practitioner when he heard of his death said, "Summerhayes! the best loved doctor on the South Coast."

He married in 1895 Miss Lucy Currie Their eight children—apart from adoptions—and ten grandchildren were a great joy to him, for he was drawn to children as they were to him

C L

EDWARD LAKE GOWLLAND

D S O, M B LOND, LIEUT COLONEL, R A M C

Colonel E L Gowlland, who died on Nov 1, at the age of 65, had been commandant of the Star and Garter home for disabled soldiers and sailors at Richmond for nearly twenty years He was an expert administrator and his interest went beyond his medical work He knew all about his patients, their family ties and problems, and his business acumen often helped them to start life again in some suitable post At Richmond and at the Sandgate annexe he was tireless in organising entertainments for the patients and staff, encouraging them in pigeon-flying, gardening and handicrafts He was a ready friend to those who were in trouble, but woe betide the impostor, for, as an old soldier he recognised the syndrome His hobby was yachting and he was a member of the Tamesis and Royal Burnham yacht clubs

His father was chief secretary to the Office of Works, and he was educated at Christ's Hospital and St Mary's Hospital, Paddington After graduation in 1901 he set up in practice at Faversham in Kent Until the last war

VITAMIN C AND REPAIR OF INJURED TISSUES

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The evidence that adequate vitamin C is necessary for repairing damage to both soft and hard tissues is now considerable, though not widely known Supplies of vitamin C from natural sources cannot be obtained as easily now as they could before the war and since a deficiency of this vitamin seems likely to retard healing of wounds and it is important to secure rapid repair of war injuries it seems timely to present concisely the information available

In the older medical writings there have been references to the breaking open of old wounds and the refracturing of old fractures in scorbutic persons The latter finding has been criticised lately (Hertz 1936) Bleeding gums, loosened teeth, and petechial hæmorrhages are often mentioned in the early papers on scurvy Though considerable clinical information about the disease has been available for many years it was not until the first twenty years of the twentieth century that the pathology of scurvy was extensively studied Hölst and Fröhlich (1907) were the first to produce experimental scurvy in animals (guineapigs), they briefly described the pathology This was followed by the work of Hart and Lessing (1913) who produced experimental scurvy in monkeys In 1919 Aschoff and Koch published an account of the microscopic pathology of scurvy and in 1923 Hojer's comprehensive work on the histology of experimental scurvy appeared These two papers showed that, as Hess noted in 1920, from a pathogenic point of view guineapig and human scurvy have many points in common

These publications showed that there was a widespread degeneration of body tissues, the skeleton being severely affected The cells of cartilage were degenerated and the proliferating cell columns disordered Bones became deformed in shape and the marrow changed to a mucoid substance (Gerüstmark) The cortex of long bones became a thin shell as if absorption of calcium was still going on from the inside of the bone but that deposition on the outside had ceased Microscopic changes in the teeth were first observed by Zilva and Wells (1919) There was fibroid degeneration of the pulp and disappearance of the cement substance The teeth also became loose, no doubt owing to the degeneration of the collagenous fibres of the dental periosteum which hold the teeth in position in the jaw (for further details see Fish and Harris 1934)

COLLAGEN PRODUCTION

The most constant change in scurvy, noted by Hojer, was atrophy of the connective-tissue fibres in various parts of the body this was confirmed by Wolbach and Howe (1926) and others and by the finding of Jeney and Törö (1936) that if vitamin C was added to the culture medium in which fibroblasts were being grown fibres were produced more rapidly Mazoue (1937) showed by similar experiments that vitamin C was an active factor in the production of connective tissue fibres and in 1939 he analysed the rate of production of collagen fibres around a mass of kieselguhr injected peritoneally into a guineapig and demonstrated a direct association between the dose of vitamin C and the time of the first appearance of fibroblasts and fibres

Quérido and Gaillard (1939) demonstrated the relation between the vitamin and production of collagen fibres by culturing osteogenetic cells from the chick in three types of plasma (1) from scorbutic guineapigs, (2) from scorbutic guineapigs but with crystalline vitamin C added, (3) from scorbutic guineapigs which had been treated with large doses of vitamin C for a few days before the experiment Hardly any fibres were formed by the cells in the first plasma but in the second and third fibres were formed as rapidly as in normal plasma The cells in the scorbutic plasma showed fatty degeneration Hunt (1941) has shown that although in scorbutic animals reticular (precollagen) fibres may be formed, in the cont[illegible]nce of vitamin C maturation of these precollagen fibres is delayed, further, mature collagen may retrogress—for example, in a scar—if vitamin C is subsequently withdrawn from an animal's diet Precollagen has a low tensile strength, and according to Hunt wounds containing mainly precollagen fibres have poor holding power

Collagen fibres can be reduced by physical means to a condition resembling precollagen (Picken 1940) If for example collagen fibres are heated to 65° C they contract and become reversibly extensible When stretched and then cooled while in the stretched condition they do not contract again, and on further stretching they "flow" like unvulcanised rubber This change in elasticity and in tensile strength therefore involves some change in the linkage of molecules to one another According to Schmidt (1939) collagen fibres are made up of longitudinally orientated polypeptide chains bound together by side-chain linkages It is on the length of these side-chains that the tensile strength of the fibre depends That there is also some chemical difference between precollagen and collagen is suggested by Heringa and Weidinger (1940) who claim that reticular fibres in general contain more sulphur than collagen fibres (2–0 5%) and that this explains the affinity of reticular (precollagen) fibres for silver salts It is difficult to imagine what part vitamin C plays in the transformation of precollagen to mature collagen Presumably it has some effect on the attachment of side-chains whether it does so indirectly, or directly by being involved in the structure of the fibre, it is difficult to say If it is incorporated in the fibre it must lose its identity as a reducing substance, for connective tissue in general has a low vitamin-C content The vitamin-C molecule has a structure resembling that of the hexose sugars and it is of interest that sugars have been found to be present in collagen According to Beek (1941) the sugars may be the "*l*" isomers of *d*-glucose and *d*-galactose Whatever the part played by vitamin C in the production and maturation of collagen fibres there seems little doubt that its presence is essential for both processes

There are two principal views about the part played by vitamin C *in the formation of intercellular fibres* The first, held by Wolbach and Howe (1926), was that "the failure of cells to produce intercellular substances in scorbutus is due to the absence of an agent common to all supporting tissues which is responsible for setting or jellying of a liquid product" This was supported by Dalldorf (1938) The second theory is that failure to form intercellular substances is due to an upsetting of the metabolism of the formative cells (Ham and Elliott 1938, Fish and Harris 1934) In the absence of vitamin C from a tissue there is certainly little development of collagen fibres, but we know little about the way collagen fibres are produced Most workers appear to think that they are formed in association with cells—for example, fibroblasts Dolianski and Roulet (1933) and Jeney and Toro (1936) claim, however, that in explants of fibroblasts collagenous fibres can form in parts of the medium free from cells, but there is no evidence that the fibres they observed were in fact, collagen fibres Danielli (1942) has pointed out that fibres which have an X ray structure similar to collagen can be spun from protein monolayers and he suggests that tissue fibres may be formed by spinning from a layer of protein adsorbed on the surfaces of fibroblasts If this view is accepted one must assume that in vitamin-C deficiency either the motility of the fibroblast is affected (possibly through some interference with its metabolic processes), so that it is unable to spin such fibres from its surface or that there is a failure on the part of the fibroblast to adsorb protein, perhaps because of some alteration in its membrane or in the physical nature of the proteins which are normally absorbed there

WOUND HEALING

One of the first experimental investigations into the effects of vitamin-C deficiency on wound healing was made in 1923 by Ishido, who found considerable delay in the healing of experimental wounds in scorbutic guineapigs Saitta (1929) found delayed healing of wounds in guineapigs fed on a vitamin-C-deficient diet and showed that the application of vitamin-C extracts to the surface of the wound increased the rate of healing whether the animal was kept on a normal or a scorbutic become practically skilled in radiography, blood-transfusion, dispensing and the conduct of an operating theatre In the past year more than 100 members have taken full-time courses in mechanics and driving Those who are going abroad are given lessons in Chinese, French, Hindustani and Amharic These are men and women whose religious convictions prevent them from fighting, but they do not hesitate to share the responsibilities of a world at war, and some have lost their lives in this service The council of the FAU needs £30,000 to maintain through a fourth year the purpose of serving where the need is greatest Contributions may be sent to the Finance Officer, Friends Ambulance Unit, 4, Gordon Square London, WC1

University of Cambridge

On Nov 20 the honorary degree of master of arts was conferred on Mr W A Mitchell, lately chief assistant in the department of pathology The degrees of MB, B Chir, were also conferred by proxy on J C N Westwood and W K S Moore

University of Sheffield

Dr Mary Simpson has been appointed assistant bacteriologist in the university The following external examiners have also been appointed anatomy, Prof R D Lockhart, physiology, Prof E G T Liddell, FRS, medicine and therapeutics, Prof L G Parsons, surgery, Major General P H Mitchiner, pathology and bacteriology, Prof S L Baker, obstetrics and gynæcology, Prof A L Robinson, forensic medicine, Prof S A Smith, pharmacology, Prof W J Dilling, public health, Dr J A Charles

The junior pro chancellor, vice chancellor, Mr Albert Harland, Prof H N Green, MD, and Prof E J Wayne, FRCP, have been elected to represent the university on the committee of management of the Sheffield Hospitals Council

Royal College of Surgeons of England

A meeting of the council of the college was held on Nov 12 with Sir Alfred Webb Johnson, the president, in the chair Mr R Davies Colley, Mr G T Mullally, Mr V Zachary Cope, Mr C E Shattock and Mr E W Riches were re elected members and Mr W H C Romanis was elected a member of the court of examiners Leave of absence was given to Mr H S Souttar to enable him to act as chairman of a mission to report on the medical services for the Armed Forces in India

The award of a Streatfeild scholarship to Miss Enid Sampson was reported Diplomas of public health and of membership (with the exception of T D Kellock, H G McQuade, J R K Preedy, D S Short, Edith Waterhouse and J F R Withycombe) were granted to the candidates named in the report of the committee of the Royal College of Physicians in THE LANCET of Nov 7, p 561

Society of Apothecaries of London

At a recent meeting of the court of assistants of this society, with Sir Stanley Woodwark, the master, presiding, Dr J P Hedley was elected junior warden for the ensuing year in succession to the late Mr Warren Low, and reappointed representative on the General Medical Council Sir Stanley Woodwark, Sir Hugh Lett, Dr Hedley and Dr A P Gibbons were appointed to give evidence on behalf of the society before the Inter departmental Committee of the Ministry of Health on Post War Hospital Policy and the Organisation of Medical Schools Prof W G Barnard was appointed examiner in pathology

Major Hugh William Davies was clothed with the livery, Henry Michael John Rowan was admitted to the freedom by servitude, and George Payling Wright, Eric Roland Webb and Clement Price Thomas by redemption The diploma of the society was granted to R M Erdman

Royal Society of Medicine

On Tuesday, Dec 1, at 2 30 PM, at the section of orthopædics, Mr Robert Young, Dr J F Brailsford and Lieut Colonel Philip Wiles will open a discussion on painful back in soldiers and in industrial workers On Dec 2, at 2 30 PM, Mr E A B Barnard and Mr L F Newman will read a paper to the section of history of medicine on the life, library and instruments of a 17th century physician At the same hour the section of surgery will meet to discuss varicose veins The opening speakers are to be Mr Reginald Payne and Mr Harold Dodd On Dec 4, at 10 30 AM, Mr F C Ormerod will give his presidential address to the section of otology His subject is to be advances in the study of hearing Afterwards Prof E D Adrian, OM, will speak on the electrical reactions of the cochlea and auditory nerve At 2 15 PM on the day at the section of laryngology, Prof B W Wir Dr Constance Wood and Dr Ralston Paterson will open discussion on the technique of radiotherapy, and at 2 30 at the section of anæsthetics Dr Freda Bannister will speak on the Oxford vaporiser in routine hospital practice

Outlook on Industrial Medicine

On Nov 17 Sir David Munro, medical officer to the Ministry of Supply, speaking to the Conservative Health and Housing Committee at the House of Commons, said that Mr Bevin had given industrial medicine its charter in his order of July, 1940, which laid down that factory managements were to engage doctors and nurses as recommended by the Factory Department Not all firms could engage a whole time doctor, but the part-time system would promote the education—badly needed—of general practitioners in occupational disease For the future Sir David envisaged an institute of industrial medicine, where toxic substances should be examined before being used in industry, and he also foresaw a diploma of industrial medicine—perhaps even a membership and fellowship—under the ægis of such a body as the Royal College of Physicians Medical services, he concluded, were part of welfare, and there should be in every factory a fusion between production, management, health and welfare services This was achieved at the Ministry of Supply by a welfare board of which the parliamentary secretary was chairman

Medical Casualties

The following casualties have been announced

Missing, presumed killed —T/Surgeon Lieutenant D J Naughton, MB DUBL, RNVR, and Surgeon Lieutenant A B Kennedy, LMSSA, RNVR

Prisoners of War —W S/Captain J K Drucquer, MB LEEDS, RAMC, W S/Captain J H McLaughlin MB, RAMC, W S/Captain F J Murray, MB BELF, RAMC, and WS/Captain R J S Walker, MRCS, RAMC

Naval Awards

The RNVR officers' decoration has been awarded to Surgeon Commander E A Gerrard, MD Manc, Surgeon Commander J L Cox, BM Oxfd, and Acting Surgeon Commander E I Puddy, MB Lond

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REFERRING to the jubilee of the *Clinical Journal* Dr Conner tells us that the late Dr L E Creasy was editor for nearly 20 years before he took over in 1913

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

Births, Marriages and Deaths

BIRTHS

DORLING —On Nov 15 at Carshalton, the wife of Mr George Dorling FRCS—a third son

EDWARDS—On Nov 19, in London, the wife of Lieutenant K C S Edwards, RAMC—a son

HUNT —On Nov 16, the wife of Major Alan Hunt, RAMC—a son

MACLEAN —On Nov 15, at Inverness, the wife of Surgeon Lieutenant K S MacLean, RNVR—a son

PEYTON —On Nov 17, at Ipswich, the wife of Captain H N Peyton, RAMC—a daughter

PRINGLE —On Oct 30, in Dublin, the wife of Major T S Pringle, RAMC—a daughter

WOOD —On Nov 15, at North Walsham, the wife of Captain K Duncan Wood, RAMC—a daughter

MARRIAGES

BEDDARD—PORTER —On Nov 7, at Rydal, Westmorland, Frederick Denys Beddard, MRCS captain, RAMC, to Anne Porter

BRUCE LOCKHART—SEDDALL —On Nov 16, at Sedbergh, Patrick Bruce Lockhart, MB RAMC to Mary Campbell Patricia Seddall

MILLS—ROWLEY —On Nov 21 at Birmingham Wilfrid George Mills, FRCS, captain, RAMC, to Margaret Jane Rowley, MB

STEEL—RIDGE —On Nov 14, at Cockfosters, Matthew Steel, MB, to Margaret Ridge

DEATHS

BLUETT —On Nov 19, at Harrow on the Hill Reginald Peter Nutcombe Buckland Bluett, MC, LRCPI

ENSOR—On Nov 22, Howard Ensor, CB, CMG, DSO MB DUBL, major general late RAMC, of Osbornes, Hawkhurst, Kent

HAYDON —On Nov 16, at Highweek, Newton Abbot, Edgar Haydon, MB GLASG

MACGILLYCUDDY —On Nov 18, at Bournemouth, Neill MacGillycuddy, MRCS aged 82

NORMAN —On Nov 17, at Shenfield, Essex George Norman, MB DURH, late of Buckhurst Hill Essex

O'LEARY —On Nov 8, at Newtonmore Inverness shire Elystan O'Leary, FRCSI, surgeon commander, RN

PEARCE —On Nov 19, at Bath Charles Ross Pearce MB EDIN, lieut colonel IMS retd of Longbridge Deverill, Warminster Wilts

Shinya (1922) found adequate vitamin C necessary for successful bone-grafting Ferraris and Lewi (1923) found inhibition of the cellular activities involved in healing a fracture They observed lack of absorption of dead material, lack of formation of osteoid trabeculæ and of cartilage Watanabe (1924) found delay in the healing of fractures in scorbutic guineapigs but not in rats (rats synthesise their own vitamin C) Other workers (Wolbach and Howe, 1925, 1926, Israel and Frankel, 1926, Schilozew 1928, Roegholt 1930, Jeney and Korpassy 1934, Hanke 1935, Hertz 1936, Lauber et al 1937, Ham and Elliott 1938, McLean et al 1939, Lexer 1939, Bourne 1942) have obtained similar results In general they have shown that there is delayed absorption of the fracture hæmatoma, reduced fibroblast activity and deficient production of collagen Bourne (1942b) has shown that optimum formation of bony trabeculæ in injured femurs of guineapigs is brought about by the administration of 2 mg daily of vitamin C (probably equivalent to about 40 mg for a human being) and that anything less than 1 mg (human equivalent about 20 mg) seriously retards the formation of bony trabeculæ

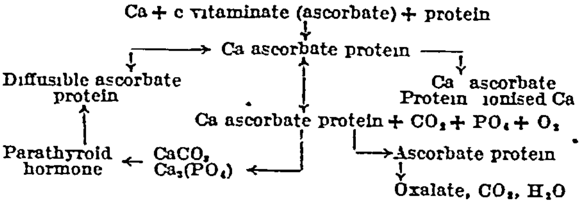
It is impossible then to resist the weight of evidence that vitamin C is essential for the formation of the fibrous ground substance of bone and it is now necessary to consider whether an amount of vitamin C in excess of that required to saturate an animal would further accelerate bone healing Halász and Marx (1932) have shown that guineapigs given an amount of vitamin C far in excess of their normal requirements did not regenerate bone any faster than they did when it was given in normal amounts Studies to decide whether rabbits regenerate bone more rapidly on a diet containing ample vitamin C has given some unexpected results Rabbits are believed to synthesise their own vitamin C and yet Hanke (1935) found that if rabbits were placed on a scorbutic diet although they regenerated bone completely the rate of regeneration was much slowed Lauber and his colleagues (1937) stated that once the normal requirements of a rabbit were satisfied extra vitamin C had no further effect on the rate of regeneration of injured bone It is difficult to appreciate that a rabbit has a normal requirement for vitamin C if it synthesises the vitamin. Giangrasso (1939) and Giangrasso and Gangitano (1939) were able to secure more rapid regeneration of injured bone in rabbits by giving vitamin C The only obvious explanation of these facts is that a normal rabbit can synthesise its own vitamin C but that the healing of a fractured bone calls for more vitamin C than the animal is able to manufacture

In 1 mm holes bored in the femurs of rats I found (Bourne 1942a) that vitamin C did not have any accelerating effect on regeneration of bony tissue Nor in similar holes in guineapigs (Bourne 1942b) was further acceleration of healing observed when amounts of vitamin C in excess (4 mg) of the optimum requirement (2 mg) were injected The general conclusion is that there is an optimum amount of vitamin C required for the regeneration of injured bones and that possibly more extensive injuries require greater amounts of the vitamin (e g , the rabbit work was performed with fractures and extra vitamin C accelerated healing, my work was performed on rats with small 1 mm holes in the bones and extra vitamin did not accelerate healing) and that vitamin C in excess is of no value in further accelerating healing

THE PROCESS OF CALCIFICATION

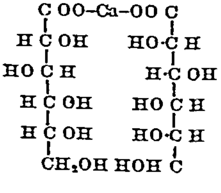
There is thus evidence that vitamin C plays an important part in the production of an inflammatory reaction to injury to organisation of the clot and to formation of the ground structure of the trabeculæ after injury to the bone The next question to be considered is whether the vitamin plays any part in the process of calcification either directly or through its association with phosphatase activity Calcium has been found to be deposited in various tissues in scurvy but it is deposited in an amorphous form This is probably due to the absence of an adequate fibrous matrix Fish and Harris (1934) point out that in the teeth in scurvy calcium salts may be deposited but that there is no matrix available for their reception Bone salt in normal bone is laid down in a crystalline form, in other words the molecules have a specific orientation which is absent from the amorphous masses produced in scurvy Schmidt (1934) suggests that when collagen fibres are first formed they adsorb precipitated inorganic salts and he points out that such fibres possess the ability to orientate particles precipitated in their presence It seems fairly certain from published work that there is a positive calcium balance in scurvy (Hess's (1920) summary of the work of Baumann and Howard) The same finding has been made for adult human scurvy (Lust and Klocman 1912 Moll 1919), infantile (Moll 1919) and monkey scurvy (Howard and Ingvaldsen 1917) Lust and Klocman found a positive balance in the scurvy stage and a negative balance in the healing stage This suggests that in scurvy the calcium may not be deposited on the bones but is being excreted instead, and that in the healing stage the calcium is being used up for deposition on bones, so that excretion falls (Salter and Aub 1931) Barlt and Edelstein (1913) found a diminished calcium content of the bones of a scorbutic infant, but Kapp and Schetty (1937) found that the mineral content of bones remained normal in scurvy Hojer (1923) stated that his histological investigations gave no reason to suppose that the calcium metabolism is primarily disarranged in scurvy He stated that dying tissue generally has a greater affinity for calcium and that this explains the calcification in late scurvy

Humphreys and Zilva (1931) found that calcium and phosphorus retention by guineapigs was lowered in scurvy but only in the last stages of the disease when the whole metabolism was affected Matricardi (1938) found that blood phosphate fell in scurvy and Lucke and Wolf (1938) claimed that extra vitamin C administered to an animal led to a greater retention of calcium and phosphorus but had no effect on the serum calcium and phosphorus If one adrenal of an animal is removed there is an upset of the calcium and phosphorus balance which is restored by the administration of vitamin C (Lucké and Heckman 1938) Lanford (1939) has claimed that orange juice added to the diet of rats caused increased calcium retention Against these observations Henry and Kon (1939) have found that the addition of 2 mg of vitamin C daily to rats had no influence on the retention of calcium Ruskin (1938) and Ruskin and Jonnard (1938) hold that there is an intimate association between vitamin C and calcium, believing that calcium is absorbed from the intestine as calcium ascorbate This compound they find to be highly ionised, non-toxic by injection, and to be adsorbed on to the blood proteins much more strongly than other salts of calcium Below is shown a presumptive scheme drawn up by Ruskin for a calcium metabolism which involves vitamin C

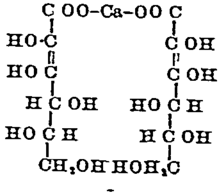


I have found (Bourne 1942a) that if calcium ascorbate is injected into rats it accelerates healing in holes previously bored in their femurs Calcium gluconate, even in the form of the glucono-galacto-gluconate, was ineffective This is surprising in view of the chemical similarity between calcium ascorbate and calcium gluconate , but to some extent it can probably be explained by the greater degree of ionisation of the ascorbate, which presumably secures more effective absorption of the calcium from the subcutaneous tissues and possibly to its greater protein-combining power It is of interest that the double-bond structure of the ascorbic acid is retained in calcium ascorbate and that this substance is therefore an antiscorbutic as well as a source of calcium

Calcium gluconate



Calcium ascorbate



diet Lauber (1933) also found external application of the vitamin to wounds in mice accelerated healing He found that, however, injections of vitamin C into normal guineapigs had no influence on the rate of healing of wounds Against these results Pioto (1936) found that injection or local application of vitamin C into normal pigeons *did not affect* wound healing Mazoué (1937) found that vitamin-C deficiency had a profound effect on the organisation of a clot produced by severing the limb muscles of guineapigs Lanman and Ingalls (1937) carried out direct measurements of the force required to break wounds in normal and scorbutic animals Their measurements were made by distending the abdomen with air and noting the pressure, on a mercury manometer, at which the wound burst Similar observations were made on wounds in the stomach wall The pressure, in mm, at which rupturing took place was as follows

	Animals receiving—	
	2 mg vit C	0 5 mg vit C
Abdominal wounds	160	65
Gastric wounds	70	30

Similar experiments have been carried out by Taffel and Harvey (1938).

Bartlett and others (1942a) found in guineapigs that the strength of the scar was proportional to its vitamin-C content For example, the scars of animals receiving 33 mg of vitamin C twice daily had on average 7 64 mg of vitamin C per 100 g of tissue and burst at a pressure of 258 mm of mercury In guineapigs on a scorbutic diet the vitamin-C content of the scars averaged 0 31 mg per 100 g and they burst at 127 mm of mercury

I have also carried out tests on the tensile strength of wounds (measured by the maximum weight each excised scar could support) made by a complete incision through the skin over each femur of 15 guineapigs, a week after they had been on a scorbutic diet with daily supplements of vitamin C as shown below, there were 3 guineapigs in each group The wounds were allowed to heal for a week while the animals were maintained on the scorbutic diet with the same vitamin-C supplements The results were

Doses of vitamin C injected subcutaneously (mg)	2	1	0 5	0 25	0
Av in g at which scar broke	283	162	154	60	46

It may be seen that there are two dosage levels where there is a distinct drop in the tensile strength of the wound between 2 and 1 mg, and between 0 5 and 0 25 mg The strength of the wound at 0 5 mg is about half that at 2 mg, this result corresponds fairly well with those of Lanman and Ingalls In the group receiving no vitamin C the figure represents the results obtained from only one animal In the other two the scar was so loose that it broke across during excision It would be worth while knowing whether the guineapig doses of vitamin C can be interpreted in terms of human requirements Bourne (1942b) concluded that 2 mg of vitamin C for a guineapig may be approximately equal to 40 mg *for man* These results therefore mean that in a person already saturated with vitamin C 40 mg of the vitamin may be required each day to secure adequate healing of wounds and that less than 20 mg may produce a scar of low tensile strength Other investigations on the strength of scars resulting from skin wounds in guineapigs on normal and deficient amounts of vitamin C have been obtained by Hartzell and Stone (1942) On the 6th postoperative day they found the strength of the wound in sub-scurvy animals was only half the normal From the 8th to 14th days it was a quarter normal

Hunt (1941) has treated human surgical cases with vitamin C, giving 1000 mg of ascorbic acid daily for 3 days to saturate the patient and 100 mg a day to maintain it Other workers have stressed the importance of adequate vitamin C for healing wounds, Lauber and Rosenfeld (1938) showed by silver nitrate staining the presence of vitamin C in healing wounds and its absence in the wounds of scorbutic animals; Wolfer and Hoebel (1940), Holman (1940) and Bartlett and his colleagues (1940) stressed the importance of vitamin C for surgical patients, and Lund and Crandon (1941b) in 58 patients *having operations* on the biliary tract found the incidence of postoperative hernia greatest in patients having low values of plasma vitamin C

Crandon, Lund and Dill (1940) showed that in a placed on a completely vitamin C free diet for 3 wound in the mid-back had healed quite well after days, but that a similar wound made after 6 m the diet showed no signs of healing after 10 days, was a lack of intercellular substance and under the the wound was filled with an unorganised blood Thus after 3 months on a scorbutic diet a wound, by macroscopic and histological evidence, had ently healed quite normally, but we do not know holding power of such a wound We have evidence however, from the work of Bartlett and others (1942b), that if the plasma vitamin-C level falls below 0 20 per 100 c cm there is likely to be reduced tensile stren in healing wounds in human beings As Hunt's made clear there may be plenty of intercellular present in a healing wound, but if most of them composed of immature collagen the scar will have poor holding power and that is the really relevant point as as normal surgery is concerned. The same argument applies to the observations of Fox (1941) In addition, Crandon and his colleagues were reporting an acute experiment What we need to know and what we do not know is the effect of suboptimal doses of vitamin C for periods of 30–40 years, and in particular in babyhood and childhood, on the reparative powers of tissues. Pfab (1927) has claimed that *inferior nutrition* during childhood will cause fractures incurred in later life to heal more slowly, but we have no real proof at present that this is so

Not only is the growth and migration of fibroblasts affected in healing wounds in vitamin-C deficiency but phagocytosis is also inhibited Hunt (1941) has stated that deficiency of the vitamin *delayed* the removal of catgut ligatures "either by phagocytosis or extrusion" Messina and Varga (1937) had previously shown that vitamin C increases phagocytosis in vitro and Tonutti and Matzner (1938) have shown that cells engaged in phagocytic activity in the body including those phagocytosing catgut sutures can be shown by silver nitrate staining (for specificity see Barnett and Bourne 1941) to contain relatively large quantities of vitamin C in their cytoplasm I have *found that* in healing skin wounds of rats these silver nitrate staining cells are sometimes present in the scar tissue within 3 or 4 days of wounding

REPAIR OF BONE

In the first stages of the repair of bone, cellular proliferation and production of fibres similar to collagen fibres are essential preliminary processes to calcification, and it is to be expected, therefore, that a deficiency of vitamin C would delay healing in bone. It has been shown (Bourne 1942b) that, in guineapigs with injured femurs taking a vitamin-C-deficient diet, the degree of healing was proportional to the amount of vitamin C given In the completely deficient animals cells in the cambial layer of the periosteum failed to multiply and fibroblasts did not migrate into the fibrin clot surrounding the injury, in cases where fibroblasts were present fibre formation was reduced or absent and maturation of fibres (estimated by their ability to stain with van Gieson) was delayed In general the normal inflammatory reaction of injured tissue was inhibited, and the change of fibroblasts into osteoblasts was also delayed. McLean and his colleagues (1939) also found delay in the differentiation *of mesenchymal* cells to osteoblasts Hertz (1936) noted a deficient production of collagen and a delayed absorption of the hæmatoma at the site of a fracture (see also Ferraris and Lewi 1923, Watanabe 1924, Wolbach and Howe 1925, 1926) In partial deficiency of vitamin C there is a tendency for collagenous material to appear instead of osteoid (Dalldorf 1938)

These changes in scorbutic animals suggest that fracture healing would be delayed in scurvy and this has proved to be the case Earlier writers were concerned with the fact that old healed fractures softened and became mobile in scurvy (Mead 1762, Marrigues 1783, Bell 1788, *Callisen* 1798, Hammick 1830, Budd 1840), though it seems that they were misled by fresh fractures or separated epiphyses into this belief Moore in 1805 stated that fractured femurs would not consolidate while patients had scurvy Bloch (1912) described scurvy as one of the causes of non-union *of fractures* Lobmayer (1918) reported delay in fracture healing in scurvy later, as the following analysis of multiple burns shows (table I)

More of the cod-liver oil group were infected, but there was little difference in the time of onset of infection between the two groups Infections arising later than the first week appeared after cleansing and retanning

TABLE I

Site of infection	Tannic acid (20 cases)	Cod liver oil (10 cases)	Onset of infection (days)		
			1–4	5–8	10–29
Face (20)	10	10	13	7	
Eyes (15)	6	9	10	5	
Ears (13)	6	7	6	3	4
Hands (16)	11	5	6	6	4
Legs (7)	7		1	3	3

The onset of infection was heralded by the appearance of moist edges and later frank pus, and was associated with greater detachment, cracking and fissuring of the tan after increasing movement of subjacent muscles This was always early and specially noticeable in the face When movement was controlled, as in the hands and legs, the tan separated later Thus we have good correlation between the beginning of loosening of the marginal tan and the onset of infection In most cases infection occurred from the marginal skin as a result of inadequate antiseptic measures This was strictly true as regards infection in the leg and thigh areas, in the face and hands, however, infection from the fauces also played a part

Eyes—Half of the 30 cases showed no conjunctivitis on admission four to eight days after injury, in these the eyelids were either unaffected or only slightly scorched, the eyes themselves were healthy Of the other half, in 10 lids and conjunctivæ were seriously damaged, and in 5 the cornea was involved in addition, ulcers and foreign bodies being present All 15 were infected, in 10 infection was apparent within four days of injury, and in the remaining 5 within the first week In 4 conjunctivitis was noted within twenty-four hours, and irrigation with boric acid lotion was then begun This was probably the only form of treatment before admission, and it was all that was necessary in 2 cases, in hospital mild silver proteinate (‘Argyrol’ 10%) was the antiseptic employed combined with frequent cleansing with wool and saline Liquid paraffin helped to keep the lids soft, the cornea moist, to ease pain and float out pus Since pus ran into the eyes from under the tan, the crusts and tan were removed as soon as possible to obviate this and to permit of free opening and closing of the lids

TABLE II—REAPPEARANCE AND PERSISTENCE OF INFECTION AFTER CLEANSING AND RETANNING OF SEVERE MULTIPLE BURNS

Infection		Face			Hands		
Reappeared after—		1 wk	2 wk	Later	1 wk	2 wk	Later
Lasted	1 wk	3	6	1	2	1	4
	2 wk	1				1	
	Longer	1*		1†	3	2‡	2§

* Otitis media 26th day † Circumorbital cellulitis 58 days
‡ Sequestra 20 and 40 days § Sequestra 60 and 80 days

With these measures the infection was terminated within a week in 5, and within two weeks in 6 cases Corneal ulcers and persistent foreign bodies prolonged the period of infection in 2 cases for three and four weeks Infection of the circumorbital areolar tissues was associated with conjunctivitis lasting for seven weeks in the remaining 2 patients Silver nitrate, 0 5%, terminated the infection of the lids in these One feature of note was that the pus from under the tan and in the conjunctival sac did not appear to damage the intact cornea The early cessation of infection, rapid improvement and excellent prognosis as regards vision in most of these was considered satisfactory

Face, limbs and trunk—Some of the areas cleaned and retanned on admission to hospital became infected again despite careful surgical technique and antiseptic measures In most of these the duration of reinfection was about a week, although the onset of reinfection varied from one to five weeks from the time of admission (table II) Such infections were slight or moderate, and essentially superficial Infection reappearing later than the second week was usually associated with involvement of the deeper tissues In the case of the face, the circumorbital tissues and external auditory meatus were the parts affected, and acute otitis media resulted in one patient on the twenty-sixth day after retanning In some instances the legs became reinfected despite a short succession of cleansings and retannings at five to seven day intervals, followed by the application of tulle-gras and mercurochrome or acriflavine. Infection in these cases was heavy and resistant and yielded, after further cleansing, to silver nitrate, 10%, and retanning with tannic acid As regards the hands, persistent infection was a sequel of ischæmic damage to digits in the group treated with tannic acid, and terminated shortly after the removal of sequestra

TABLE III—BACTERIAL FLORA IN 200 HEALTHY NAVAL PERSONNEL

Organism	Fauces	Skin	Contiguous garment
	%	%	%
Strep viridans	50		
Pneumococci	50		
M catarrhalis	35		
Staphylococci (hæmolysin and coagulase negative)	35	90	80
Staphylococci (hæmolysin and coagulase positive)	20	25	14
Hæmolytic streptococci	5		—

We do not wish to discuss the relative merits of tannic acid and cod-liver oil in the treatment of burns, but it may be remarked that, despite slight or moderate infection, those 5 cases in the oil-treated group which did not require cleansing and retanning progressed favourably, were well healed within twenty-seven days, and had scar-free skin better than that of the most successful cases treated with tannic acid

CAUSES OF INFECTION

The *Staphylococcus pyogenes* was the predominant organism, and in a study of the fauces, skin and clothes of a sample of healthy personnel afloat we have found that organism to the extent of 20%, 25% and 14%, and hæmolytic streptococci in the fauces only in 5% (table III)

From all 22 infected cases the *Staph pyogenes* was recovered from the burn and the duration of infection discussed above refers to the persistence of that organism The other organisms recovered were regarded as additional, and were as shown in table IV These findings apply only to this group of cases

TABLE IV

Organisms	Tannic acid group (12 cases)	Cod liver oil group (10 cases)
Staph pyogenes	All	All
Streptococci (non-hæmolytic)	5 (lasted 1–8 days)	4 (lasted 1–4 days)
B proteus	2 (lasted from 10th to 20th days until exudate dry)	8 (lasted from 8th–10th day for 10–15 days until crusts dry)
Subtilis group		8 (lasted from 8th–10th day for 10–15 days until crusts dry)

Most of the cod-liver oil series became infected with *Bacillus proteus* and some members of the subtilis group of organisms, this occurred about the eighth day and persisted until the crusts of purulent exudate and oil were thoroughly dry Broth cultures of the crusts, however, continued to yield these organisms and the staphylococcus for further periods, in fact, until the crusts separated, proteus and subtilis bacilli could always be recovered, and in this respect they outstripped the staphylococcus in viability

From a review of the case-notes of this series, there is little doubt that chief among the causes of infection are

That there is a connexion between vitamin C and calcification of bone is suggested by the work of Salter and Aub (1931) They showed that in guineapigs on a scorbutic diet and injected with sodium alizarin sulphonate (which forms a coloured lake with calcium ions so that freshly deposited calcium is stained) the bones of the animals were stained red indicating that calcium deposition was proceeding normally In scorbutic guineapigs they found the bones unstained Deficiency of vitamin C therefore causes inhibition of the mechanism which results in the deposition of calcium in bones I have been able to support this result and have found also (Bourne 1942c) that in guineapigs receiving injections of sodium alizarin sulphonate and with small holes bored in the femurs, the repair tissue stained strongly in those receiving injections of 2 mg daily of vitamin C for 2 weeks, less intensely in those receiving 0 5 mg and not at all in those receiving no vitamin C

The work of Gould and Shwachman (1942) suggests that vitamin C may play some part in the deposition of calcium by means of its effect on the phosphatase system of bone They found a lowered phosphatase content of the bones of guineapigs in scurvy, and I have found (Bourne 1942c) that in scurvy the bones of guineapigs stain less intensely with *Gomori's phosphatase technique* than those of normal animals and that the repair tissue filling a small hole in the femur of a scorbutic guineapig also stains much less intensely than similar tissue in normal guineapigs It seems, therefore, that vitamin C may play three important rôles in the regeneration of bone it may promote activity of fibroblast cells and possibly their differentiation into osteoblasts, it may favour the attachment to each other of the polypeptide chains which make up the constituent collagen fibres of the bone matrix, and by promotion of phosphatase activity it may aid in the precipitation of bone salts

SUMMARY

From the results presented in this paper it appears that vitamin C plays a fundamental part in the regeneration of tissues and for this reason it seems that the administration of vitamin C should become a routine in the treatment of any injury Preliminary results with animals (Bourne 1942a) suggest that calcium ascorbate may prove a valuable therapeutic substance for the treatment of fractures, but clinical trials with this substance have not yet been carried out

I wish to thank Roche Products for the vitamin C ('Redoxon') used in the wound healing and other experiments carried out by the present author quoted in this paper

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INFECTED BURNS IN NAVAL PERSC

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We wish to report on a single series of 30 cases severe multiple burns selected from a larger series cases, since they occurred at the same time and subjected to similar transportation All the cases severely burned, mainly as the result of cordite and high temperature flash, the face, including the ey and the hands were particularly affected The themselves were only slightly damaged in a few instan protection being achieved by the very rapid, reflex closing of the lids and the added shielding by hands The ears also suffered The legs, thighs trunk were involved in varying degree

The cases fall naturally into two groups in an experiment devised unwittingly by the medical officers cerned with early treatment In one group (20 tannic acid was employed throughout, in the group (10 cases), tannic acid (5% aqueous solution, application in compresses) having proved inadequate, dressings of cod-liver oil were used after cleansing admission to hospital, 8 of the 20 cases treated with tannic acid were not infected, 4 were moderately infe at the margins, and 8 were so infected as to cleansing and retanning, of these last, 2 later reinfected All 10 treated with cod-liver oil were infected, 5 moderately so, the other 5 were cleansed and retanned (tannic acid), and of these 3 became reinfected, only 2 not becoming septic again

ONSET OF INFECTION

The face and eyes became infected early, usually within the first four days and in all cases within the first week, the limbs were usually involved slightly

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repeated, initial or continued protein loss, slow recovery from anæmia and the like As regards the time taken to heal from the cessation of infection, there was no appreciable difference between the oil-treated and the tan-treated group , and these have not been differentiated in table V

TABLE V—DELAYED HEALING IN 30 CASES

Infection	Duration of infection (days)	Total time to heal (days)	Time to heal from end of infection (days)	
None	—	12–25	12–25	Normal time
Slight	4–14	17–35	13–21	
Moderate	15–20	35–45	20–25	
Gross	20–45	50–100	30–60	
(1)	45	72	27	
(2)	82	117	35	
(3)	40	83	43	

CONCLUSIONS

The conclusions to be drawn from these observations on the bacteriological findings and the time and mode of infection, are that adequate early antisepsis is necessary and that like measures must be continued Where facilities for relatively leisurely cleansing are available, antiseptics should be applied to the raw area and the marginal skin before and after tanning Where such facilities are not available, or are limited by reason of large numbers requiring treatment at the same time, the tanning agent should be accompanied by a suitable antiseptic or should be in itself a suitable protein coagulant and antiseptic—for example, crystal violet, 1%, or silver nitrate, 10% From the evident efficacy of crystal violet when used alone, it seems to us an unnecessary expense to incorporate a salt such as sodium ethyl mercurithiosalicylate in a crystal violet jelly , infections due to *Bacillus coli* and like organisms are uncommon and crystal violet is effective against staphylococci and streptococci If an area is not to be tanned it should be rendered as bacteriologically clean as possible, and the adjacent skin margins should be treated with antiseptics at the outset; an efficient antiseptic containing tulle-gras should then be applied, such as the one containing 60 parts of proflavine oleate 1% in liquid paraffin and 40 parts of soft paraffin which we have already described[2] We do not agree that the use of tulle-gras with moist saline dressings, frequently or occasionally changed, minimises the risk of infection On the contrary, until the fibrin layer which forms in the serous exudate on the surface is left undisturbed and allowed to dry these moist, open wounds are particularly liable to reinfection

The keynote in treatment should be rest and lack of interference After the elimination or minimising of infection by full aseptic technique and adequate antiseptic measures there is no better dressing than a dry occlusive one, preferably a coagulum, for this is a close approximation to Nature's method of healing under a scab

SUMMARY

A group of 30 cases of severe multiple burns, sustained at one time in like circumstance, is reviewed with regard to onset and course of infection, to coagulants and antiseptics employed in initial and subsequent treatment, and to the time of healing

The first-aid coagulant, tannic acid in 2½–5% aqueous solution, applied in compresses was not altogether satisfactory At the first full treatment 10 cases were cleansed and treated with cod-liver oil and on reaching the base hospital about a week later all of this subgroup showed infection 5 moderately infected cases progressed favourably despite mixed infection, exudates dried, crusts separated, and were healed by the twenty-seventh day, without blemish , 5 much infected were cleansed and tanned (tannic acid 10% or 15%) Of 20 cases further tanned (tannic acid 5%) at the first full treatment, 8 were not infected, 4 showed marginal infection, and 8 seriously infected were cleansed and retanned on reaching hospital. Of the 13 retanned, 8 remained clean , infection persisted in 5 with ischæmic changes and deep tissue damage, and cleansing and tanning was repeated

Infection was always associated with separation of the margins of the coagulum, initially or later, and was related to muscular and general movement , it was seen early in face, eyes and ears, later in hands and legs

Staph pyogenes was the principal organism in all cases , non-hæmolytic streptococci, *B proteus* and *B subtilis* were additional in some, the last two particularly in the cod-liver oil group

Factors contributing to infection were inadequate coagulation at first-aid and first full treatment, and ineffective antiseptic measures at these times

The antiseptics used (one application) delayed infection as follows acriflavine for two to seven days , mercury perchloride five to ten days , mercurochrome for five to twelve days , silver nitrate for fourteen days or more Gentian violet and brilliant green were very effective, but it was necessary to repeat the applications, especially at margins In fully established sepsis, lymphagogues were effective in removing tan and diminishing sepsis ; remaining infection was then more easily treated by antiseptics

After cessation of infection which had lasted three weeks, healing occurred within normal time—three weeks or thereby Infection persisting longer, up to six weeks, and greater tissue damage, prolonged the healing-time to four or six weeks after the infection had cleared

The essentials for the prevention of infection are thorough and efficient antiseptic measures to the burned area and marginal skin, formation of a sound coagulum at the outset, continued application of antiseptics to skin margins, rest and lack of interference

We wish to thank the Medical Director General of the Navy and Surgeon Rear-Admiral Stephens for permission to draw from many case notes, and the many medical officers concerned

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POSTVACCINAL ENCEPHALITIS

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THE appearance of smallpox in Glasgow in June–July, 1942, resulted in the vaccination of a very large number of persons Accurate figures are as yet difficult to obtain, but the medical officer of health in his report states that over 617,000 doses of lymph were issued in respect of persons living in Glasgow and neighbourhood , further 378,315 persons were dealt with at the public vaccination clinics It is estimated that the addition of vaccinations conducted by general practitioners and at various works, factories and hospitals would bring the total to about half a million Most of these vaccinations were carried out in July The vaccination of such a large number of persons in such a short time is probably without precedent

The possibility of postvaccinal complications was foreseen, and, accordingly, an observation ward was set aside in this hospital so that all such cases reported to the Public Health Department might be dealt with in one place During the ensuing weeks 29 cases were admitted Most of these consisted of different skin manifestations which for social or other reasons warranted admission to hospital It is to record 14 of these cases, admitted to the hospital as postvaccinal encephalitis, that the present report has been prepared They comprise all such cases which came to the knowledge of the Public Health Department

EPIDEMIOLOGY AND CLINICAL FEATURES

The main features of this group of cases are shown in the table It will be seen that in 7 the notified diagnosis was sustained , in 5 on clinical grounds and in 2 on the results of microscopic examination of tissue

Incidence —We are trying to trace any possible cases which were not notified We do not think there can be many It is clear that the incidence of encephalitis varies within very wide limits Thompson (1931) produces a table in which the incidence varies from 1 12 inadequate initial tanning and inadequate and ineffective antiseptic measures within the first forty-eight hours after injury—the inadequate character, in short, of the first-aid and next immediate treatments This is not an indictment of the painstaking personnel conducting the treatment under the difficult conditions of war-time service afloat, but rather of the therapeutic agents employed.

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[2] Heggie R. M , Gerrard, E A , Heggie, J F , et al *Lancet*, 1942, i 347

METHODS OF TREATMENT

Tannic acid —From this series and from our experience of other cases reaching hospital, it has been evident that tannic-acid compresses (2½–5% solutions) are ineffective as regards resulting tan, while tannic acid applied in jelly form (10–20%) has been effective and yielded results equal to those obtained in peace-time from the application of tannic acid by spraying and drying Furthermore, the tan from those stronger applications has withstood the test of transhipment and travel to base hospital A weak solution of tannic acid brings about coagulation slowly, and the area requires to be dried and the solution reapplied many—even 20—times at intervals to secure a satisfactory coagulum During this protracted time of coagulation serous exudation continues and will continue for many hours, resulting in increased shock and even floating-off of the tan Practical experience has shown that tannic acid in concentrations of 10–20%, either swabbed on or applied in jelly-form, brings about rapid and effective coagulation and aids materially in reducing pain and loss of serum from damaged capillaries, and consequently diminishes shock This is also the opinion of those who have contributed to the recent EMS Memo on the subject (EMS/GEN/243), yet Clayton and his colleagues [1] are surprised that " even so elementary a question as the most effective concentration for the tannic acid solution is not settled in medical literature " They appear to have overlooked the fact that, in peace-time practice at least, the more dilute solutions were employed in spraying, drying, respraying and redrying, and that the end-result of such measures is similar to the single application of the stronger solutions

Cod-liver oil —We cannot discuss the comparable rôle of cod-liver oil, since it was not used as a primary coagulant In this series it was used at the second treatment (i e , the first full treatment) as an alternative to tannic acid In most of these cases a moderate coagulum resulted But having regard to the almost invariable infection of this group, and a serious degree of shock in one case on admission to hospital, it seems reasonable to conclude that even as a late coagulant the action of cod-liver oil is slow and equal only to that of tannic acid in weak solutions Clayton and his colleagues quote Lohr, who treated nearly 1000 cases of burns, as stating " the cod-liver oil treatment of burns does not influence primary shock " (presumably this is related to the coagulation effect) " but is remarkably effective in controlling the secondary infection of large areas A rapid cleansing of the wound follows its application, and epithelialisation is stimulated to a degree not seen in any other form of treatment " Our conclusions as regards the coagulating quality of cod-liver oil thus appear to be in accord with Lohr's Our findings are quite different when infection is considered, but it should be remembered that Lohr's cases were encased in plaster, our cases were not so enclosed, in addition they were subject to handling in transhipment, and both these things probably contributed to infection At no time have we observed cod-liver oil acting as a stimulant to epithelialisation, Lohr's cases probably healed quickly because of the absence of infection, and the immobilisation afforded by the plaster casing

Gentian violet was not used in this small series In 1% solution or jelly-form it affords a good coagulum, but we have not seen it used in extensive multiple burns in the primary treatment

Antiseptics in initial treatment —Antiseptics should never be allowed to replace surgical cleanliness, but some antiseptic must necessarily be applied to the raw area before tanning, and repeatedly to the tan and the marginal undamaged skin if infection is to be prevented From this series and from other cases we have formed some opinion of the value of the antiseptics commonly used. Cleansing with spirit soap followed by the use sterile saline and later ether, even when carried out all due surgical care and attention, is insufficient prevent infection and is harmful to the patient, to shock by considerably increasing loss of body heat. One of the non-irritant synthetic detergents, in aqueous solution, should replace the relatively inefficient spirit and ether soaps commonly used We have judged the effect of the antiseptics employed by the day on which infection was noted clinically. This was the only method possible for assessment of cases before admission, and we continued to use this standard afterwards, so that our results might be comparable This is admittedly a rude yardstick, and presumes that the chances of infection were equal in all

Acriflavine, 1/1000 aqueous solution, delayed infection for two to seven days , mercury perchloride, 1/5000 aqueous solution for five to ten days , silver nitrate, 10% aqueous solution, when combined with retanning, for about fourteen days (i e , until the marginal tan began to separate), and mercurochrome for five to twelve days In contrast, crystal violet and brilliant green were effective in preventing infection altogether, when used in conjunction with tannic acid coagulation , they were applied to the tan and marginal skin in 0 1%, 0 5% or 1% aqueous solution It must be pointed out, however, that when employed in 1% solution they were reapplied as a rule every fourth or seventh day, and when in lesser concentration, sometimes every day This contributed considerably to their efficiency The cases which we have seen treated with crystal violet alone, 1% in a jelly, have not been infected, but such burns were mainly of relatively small areas, face, hands and forearms, and seldom of the third degree , in 3 of the 14 the jelly was reapplied to the margins on the fourth and seventh days Thus our assessment of the order of usefulness of these several antiseptics is really only true as regards their original single application to the affected area and immediate surroundings and does not apply to their value on repeated application The necessity for reapplication is obvious

Antiseptics in established sepsis —None of these antiseptics was very effective alone in the presence of moderately heavy infection when applied to infected granulating areas after shedding or removal of tan The number of organisms fell to some extent but the infection appeared to persist in the deeper parts of infected tissue In cases not retanned, lymphagogues were the most effective agents in ridding an area of most of the infection from superficial as well as deeper zones of the granulations, and sometimes these alone rendered such areas sterile after their application every four or eight hours for three days Lymphagogues were also of much assistance in separating sloughs and loosening tan from areas of third degree injury When complete sterilisation was not achieved at the end of three days, proflavine, 0 1% in normal saline or in buffered isotonic solution, usually secured complete sterilisation in a further one to three days The striking value of lymphagogues suggests that in most cases the majority of the infecting organisms were in the related lymphatic channels and could be dislodged mechanically by increasing lymph flow

Chemotherapy —Of the series of 30 cases, 5 received sulphapyridine in full doses for four to six days, the initial dose being given on any day from the second to the eighth No difference was noted in the degree of infection present between this subgroup and the remainder on admission If sulphathiazole had been used a greater bacteriostatic effect might have been evident

RATE OF HEALING

Most cases healed to a small extent while moderate infection continued , once the infection was checked healing as a rule proceeded as in normal uninfected areas In some instances, however, where infection persisted for more than three weeks there was delay (table V) That infection was not the only factor concerned in delayed healing is seen from 3 of the grossly infected cases of the series In these, infection lasting forty-five, eighty-two and forty days was associated with healing over twenty-seven, thirty-five and forty-three days The first of these can be regarded as having healed in approximately normal time , delay in the others is not very great—certainly not as great as in a few others we have seen—and was associated with such additional factors as tissue deeply affected, dressings too often

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[1] Clayton, W , Thomson, D and Howard, A J *Lancet*, 1941, i, 341

ENCEPHALITIS WITH SKIN ERUPTION AFTER VACCINATION

TRANSFUSION OF IMMUNE BLOOD

R. VAUGHAN FACEY, B.M. OXFD
MAJOR, R.A.M.C.

SINCE Luksch recorded a case of postvaccinal encephalitis in 1924 some hundreds of cases have been notified from many different countries but in spite of extensive inquiry the ætiology of the condition is still uncertain. Generalised vaccinia is another well-recognised complication of vaccination but most observers deny that it ever coincides with encephalitis. The case to be described presented characteristic features of encephalitis of postvaccinal type arising on the same day as a generalised vesicular eruption.

CASE-HISTORY

A gunner aged 19 had had no previous illness and there was no family history of nervous or allergic disorder. He had not been vaccinated. Primary vaccination, with one insertion, was carried out on June 6, 1941. There was a normal "take." He remained fit until June 30 when he noticed a few spots like insect bites on his ankles. He first reported sick with these on July 5, when he also complained of a slight sore throat. Next day (30 days after vaccination) the rash became generalised, the temperature rose to 104° F. and he was admitted to hospital. His only symptoms then were slight sore throat and some skin irritation.

On July 6 his temperature was 103.8° F., pulse rate 116 and respirations 22 per min. The face was sallow. He was stuporose but able to answer simple questions. There were periods of restlessness with athetotic movements of the upper limbs; skin was hypersensitive; he shouted and jerked his limbs on being touched. The pupils were equal and reacted normally to light and accommodation. All reflexes were brisk; plantar responses flexor; there was no paresis, no neck-rigidity and Kernig's sign was negative. The tongue was of the strawberry type; teeth, gums and buccal mucosa were healthy but covered with sordes. The fauces were injected but there was no membrane. Cultures from a throat swab gave a growth of hæmolytic streptococci. Nothing abnormal was found in the heart, lungs or abdomen. A single normal vaccination scab was surrounded by a small areola on the left arm. The skin around the scab was otherwise unaffected but large areas of the trunk and limbs were covered with an urticarial rash. On the wrists, ankles and at the back of the neck some patches were studded with small vesicles, 2–4 mm. in diameter, some acuminate, others arranged close together in clusters, giving the impression of lobulation. A few had become pustular. Urine normal. Blood culture negative. Wassermann reaction negative. Blood count: white cells 10,000 per c.mm. (polymorphs 73%, eosinophils 5%, monocytes 5%, lymphocytes 17%); no other abnormality.

On July 7 early papillœdema of both eyes appeared with congestion of retinal veins. His condition was otherwise unchanged. On lumbar puncture clear cerebrospinal fluid was obtained; the pressure could not be estimated. CSF: cells 1 per c.mm.; protein and sugar normal; cultures sterile. A tentative diagnosis of postvaccinal encephalitis was made. Next day the papillœdema was more evident, the right plantar response was extensor and the lower right abdominal reflex absent. There was a slight rigor, temperature 102° F. Lumbar puncture yielded clear fluid at a pressure of 100 mm. of CSF; no abnormal constituents; sugar 0.069% (Maclean). The patient was still very ill, restless and hypersensitive. In view of the records of cases successfully treated with immune serum by Horder (1929) and with immune blood by Heckman (1930) it was decided to adopt this treatment. The donor chosen was of the same blood group as the patient and had been successfully vaccinated three months before. A transfusion of a pint of whole citrated blood was given in the evening by the drip method; it caused no reaction. The patient slept well. Next morning there was a striking improvement, the skin was much less sensitive, the restlessness had gone and he looked happy and comfortable. There was now a bilateral extensor plantar response. From this time the temperature began to fall and all active symptoms of encephalitis quickly disappeared.

On July 13 the ophthalmologist reported: "No change in central fields to white or coloured objects. Peripheral fields full. Œdema of nerve heads more pronounced. Marked engorgement of veins. Patient can still read small print with each eye. This suggests an increase of intracranial pressure rather than true optic neuritis." On lumbar puncture the CSF pressure was 90 mm. and the fluid normal.

By July 17 the papillœdema in both eyes was beginning to subside. There was some neuroglial infiltration on the left nerve head. The patient experienced some transient difficulty in micturition during the next few days but his further progress was otherwise uneventful.

The rash.—On admission the vesicular lesions were painted with ichthyol in collodion. They dried up in a few days and the remaining urticarial lesions faded without desquamation, but on July 16 large white areas flush with the surrounding skin, and giving off a strong, sweet smell suggestive of a proteolytic infection, appeared on the hands, wrists, feet and ankles. The temperature rose to 101° F. On removing the dead skin there was a scanty serous exudate containing a few pus cells and cocci. Cultures gave a growth of hæmolytic streptococci and coagulase positive staphylococci. Examination of skin scrapings showed no fungi.

Treatment.—The transfusion of immune blood on July 8 has already been described. In view of the streptococcal infection of the throat and tongue and the presence of a number of skin pustules, sulphapyridine was given from July 9 to 12. Total dosage 20 g. At the end of this time these lesions had cleared up. Skin toilet, baths and dressings with gauze soaked in acriflavine lotion sufficed to clear up the infection of the skin of the extremities. Ascorbic acid was given by mouth. Later, massage was given for the leg muscles.

He got up on Aug. 7 and was discharged fit on Aug. 21. Re-examined on Oct. 15, he was mentally and physically well, and the ocular signs had almost disappeared.

DISCUSSION

In considering the effect of the transfusion, it is necessary to bear in mind that postvaccinal encephalitis commonly runs a stormy course with an abrupt remission in non-fatal cases; the improvement which immediately followed the transfusion may have been due to non-specific factors, but whatever the explanation the change was certainly dramatic. Flexner (1930), in a review of published work, failed to find any recorded cases of generalised vaccinia complicating postvaccinal encephalitis. In the reports on vaccination of the Rolleston committee (1930), 25 fatal cases of postvaccinal encephalitis were described. One (case 114), a boy of 11 years, developed encephalitis on the eleventh day and a papulovesicular rash on the trunk and limbs on the sixteenth day. A case occurring in an infant of 5 months was reported in France (de Lille 1940). Weichsel (1931) described the simultaneous appearance of encephalitis and a general rash on the nineteenth day in a patient aged 17 months. In the later stages white areas appeared flush with the surrounding skin. These lesions were apparently very similar to those found in the present case. Weichsel attributed the condition to "the lively production of antibodies in the skin and cerebral tissues simultaneously." I have been unable to find any record of other examples.

Though postvaccinal encephalitis is commonest at school age, adult cases undoubtedly occur, and some have been reported in this country. In my case the incubation period of thirty days is unusually long. Some of the authorities quoted (Flexner and Rolleston committee) agreed that this period was commonly about 11–12 days, but Flexner noted that there have been cases where it was between 19 and 34 days, this being true of 3 out of 87 English cases and 4 out of 123 Dutch cases. Donnally (1931) reported 2 (of 5) cases which occurred in the fourth week after vaccination. In most of such instances the patient has been an infant. This type of encephalitis has been recognised in association with measles and other exanthemata but never with streptococcal infection,

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Continued from previous page

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SUMMARY OF 14 CASES ADMITTED TO HOSPITAL AS POSTVACCINAL ENCEPHALITIS

Case	Date of admission in 1942	Age (yr)	Sex	Previous vaccination history	Recent vaccination history		Days between vaccination and onset of symptoms	Local vaccination response	Main clinical features on admission	Final diagnosis	Result and remarks
					Date	Lymph					
1	July 10	6	M	—	June 25 ,, 28	GLE	10	Normal	Semi comatose extremely irritable	Postvacc enceph	Recovered
2	,, 14	16	M	—	July 5	GLE	6	Severe	Drowsiness, spasticity of lower limbs	Postvacc enceph	Recovered
3	,, 15	41	F	Infancy +	,, 3	GLE	8	Normal	Deep coma	Postvacc enceph	Recovered
4	,, 16	10	F	—	,, 2	Evans	12	Normal	Drowsiness bilateral paresis of lower limb	Postvacc enceph	Recovered
5	,, 16	5	M	—	,, 1	GLE	14	Normal	Deep coma	Postvacc enceph	Died Diagnosis corroborated at autopsy
6	,, 26	2	M	—	,, 5* ,, 12	Jenner s	12	Normal	Deep coma	Postvacc *enceph*	Died Diagnosis corro*borated at autopsy*
7	Aug 4	16	M	—	9		14	Normal	Retention of urine, signs of transverse myelitis in thoracic region	Postvacc enceph	Recovered
8	July 10	4	M	—	, 3	GLE	7	Normal	Convulsions	Epilepsy	Recovered History of fits when aged 1½ and 2 years
9	, 10	39	M	Infancy +	, 4	Jenner s	12	Severe	Semi comatose paralysis of lower limbs	Cerebral thrombosis	Died Diagnosis on histological examination
10	,, 18	29	F	—	, 9	GLE	1	Severe	Severe frontal headache	Postvacc systemic reaction	Recovered
11	, 20	47	M	—	, 8		7	Severe	Severe occipital headache	Postvacc systemic reaction	Recovered
12	,, 21	33	F	Infancy + and 12 yr +	11	Evans	3	Normal	Convulsions	Hystero epilepsy	Recovered History elicited definite neurotic background
13	, 28	19	M	—	,, 1	GLE	16	Normal	Slight drowsiness	Post vacc systemic reaction	Recovered
14	,, 15	10 wks	M	—	,, 5	Lister Inst	6	Very severe	Dead on admission	c Staph septicæmia	Died Staphylococcus (coagulase + and hæmolytic) from heart blood and spleen

* Did not take GLE = Government Lymph Establishment

to 1 330 000 according to the reports of different observers. The incidence in Glasgow (about 1 70,000) is a little lower than that reported (1 48,000) for England (Committee on Vaccination, 1928) No comment can yet be made regarding age, sex and previous vaccinal history, for the relative figures for the vaccinated population are not yet available Case 3, which recovered from deep coma, was well vaccinated in infancy

Source of lymph —The greatest proportion of persons were vaccinated with lymph from the Government Lymph Establishment The cases were not associated with any particular batch or source of lymph, which conforms with previous experience

Time of onset after vaccination —The cases all occurred within 6–14 days of vaccination, one on each of the 6th, 8th, and 10th days, two on the 12th and two on the 14th day Armstrong (1932) reports that the commonest latent period after vaccination is 10–13 days in Thompson's (1931) collected series, 82% of the cases occurred within 7–14 days of vaccination

Clinical features —In the 3 most severe cases (3, 5 and 6) deep coma was the outstanding feature, in these the clinical picture on admission was essentially similar and prognosis, on ordinary medical indications, seemed very bad Cases 5 and 6, however, were the only two who received an anti-vaccinal horse serum kindly supplied by the Lister Institute In case 5 its administration was without effect, in case 6, which also received much additional therapy, the coma appeared to lighten considerably for about 24 hours In both cases serum was *not* used as a last resort The recovery of case 3, quite unexpected in view of the apparent severity on admission, *would lead us to be very disinclined* to hazard a prognosis in any severe case, and, therefore, to place any stress on an isolated recovery after the use of a particular treatment In case 7 the lesion seemed to be confined to the spinal cord There was a definite and typical transverse myelitis X-ray examination of the spinal column revealed no abnormality This case is very similar to those previously reported by Peake (1929) and Brockbank (1931)

In contrast to the apparent severity at the onset recovery, when it occurred, seemed complete We have seen all the cases since dismissal and no sequelæ have been noted

Other cases —In 3 of the other cases the condition was merely a severe general reaction to vaccination In 2, epilepsy was the correct diagnosis—in one, there was a definite history of fits in earlier life, in the other, the patient was of an emotional type and vaccination had merely acted as a "release" In case 9, the diagnosis rested on microscopic examination of brain tissue The exact ætiology of this lesion was not clear, although the relationship with vaccination seemed suggestive Case 14 is, so far as we know, the only case in which death was the result of infection

SUMMARY

About 500,000 persons were vaccinated in Glasgow during July There were 7 cases of postvaccinal encephalomyelitis, of which 2 died, 6 of the 7 cases were in persons over five years of age vaccinated for the first time Two other deaths occurred in connexion with the vaccination campaign, one from cerebral thrombosis and one from septicæmia

Continued at foot of opposite page

THE LANCET

LONDON. SATURDAY, DECEMBER 5, 1942

PROSPECTS IN THE NEXT INFLUENZA PANDEMIC

WILL this war, like the last, bring in its train a pandemic more lethal than the war itself ? Does the work of the last decade on influenza viruses put us in a better position to control a pandemic if one should arise ? Is not this the time to look ahead and plan a programme of research and attempted control ? These are the questions which BURNET and CLARK[1] ask in a stimulating monograph published in Australia In this they summarise the knowledge gained since 1933 about influenza A virus its behaviour in laboratory animals and its relation to disease in man, and set down the comparatively little that is known about the serologically distinct influenza B virus Next, they try to interpret the epidemiological and other features of the 1918-19 pandemic in terms of the knowledge since gained about influenza viruses We do not, of course, know whether the cause of the pandemic was virus A or B, or something else, though it probably differed antigenically from the agent causing influenza in the pre-pandemic years BURNET and CLARK think it may have differed also in some other biological property, perhaps in the speed with which it could spread over and infect the respiratory tract

Their survey of existing knowledge leads on to a discussion of prevention and control Land quarantine is impracticable The quarantine imposed at ports apparently kept Australia free from the pandemic disease until January, 1919, though immunisation by the "ordinary" influenza, which prevailed in Australia in the autumn of 1918, may have contributed to that result If the quarantine measures were as effective as appears, one would have to believe that infection was spread only by persons with active and overt disease There is some evidence that this is not the case as regards the epidemic influenza prevalent more recently Subcutaneous vaccination against influenza virus A can certainly increase neutralising antibodies in man , the latest vaccines have reduced the incidence of infection in some trials[2] but not in others[3] There is apparently a closer correlation between antibody level and immunity in the experimentally produced infections of man than in naturally contracted influenza, BURNET and CLARK see here a clue worth further pursuit There has lately been a highly successful trial of vaccine where the test was a deliberate infection of human volunteers[4] This result contrasts with the much less dramatic outcome of field trials of vaccines Altogether there seems little justification for building up large stocks of virus-A vaccine at present, particularly as the antigenic nature of pandemic virus is unknown But when a pandemic has once begun, large-scale production of the appropriate formolised vaccine can scarcely be developed in time or on anything like the requisite scale The Australian workers are therefore attracted by the idea of developing an attenuated strain which, given intranasally in the living state, might lead to a subclinical infection which would produce immunity to the serious form of the disease Relatively small quantities of such a living vaccine would be needed A trial by BURNET[5] with influenza B virus encourages such hopes , virus adapted to the chick embryo and given intranasally to 22 volunteers produced trivial symptoms or none, and yet caused a substantial rise in antibodies in persons in whom these were initially low Unfortunately BURNET's earlier attempts to achieve a similar result with influenza A virus—probably the more important pathogen—were much less successful He suggests that, if the next pandemic follows precedent in coming in several waves, an attenuated strain might be developed from virus isolated in the first wave in time for it to be used for immunising against later waves In 1918, however, an actual attack of influenza in the first wave was no guarantee of immunity in subsequent waves

There are two other possible weapons of defence Success has been achieved in protecting mice against influenza infection by local passive immunisation of the respiratory tract with atomised immune serum[6] SMORODINTZEW and his colleagues[7] in Moscow have used this method in human volunteers An apparatus was constructed from which 15 people at a time could inhale atomised anti-influenzal horse serum through masks A 90% reduction in the incidence of influenza is claimed, though we are not told what were the criteria used for the diagnosis of influenza in the treated or control groups Such a method has the advantage over vaccines that it could be used early in a pandemic—as soon as convalescent sera from the first victims were available In America the antiseptic vapour of propylene glycol is being intensively studied, especially by ROBERTSON and his colleagues[8] STOKES and HENLE[4] report that both propylene glycol and ultraviolet irradiation had an astounding effect in saving the lives of mice exposed in an empty ward to mists of atomised influenza virus which killed 100% of control mice, and HARRIS[9] has had encouraging results in reducing respiratory infection in this way in a convalescent home for children Propylene glycol, even in the rather high concentrations needed, is said to be non-toxic for man, but to be effective much larger quantities have to be put into the air than is the case with hexylresorcinol, resorcinol or hypochlorites There is almost certainly a big future for antiseptic aerosols, but it is hard to prophesy which will be the most useful

BURNET and CLARK admit that recent additions to our knowledge of viruses may not suffice to permit control of a new pandemic , but, very rightly, they urge that we must at least be ready to study it intensively when it comes, to learn all we can of its genesis and perhaps place ourselves in a position to prevent the next pandemic but one Meanwhile, remembering though Horder suggested that concurrent infection may be an exciting factor in some vaccinal cases. It is possible that the oral streptococcal infection which preceded the onset of the acute symptoms in the present case may have had such an effect.

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[1] Burnet, F M and Clark, E Influenza A survey of the last 50 years in the light of modern work on the virus of epidemic influenza Monograph No 4 of the Walter and Eliza Hall Institute London Macmillan

[2] Horsfall F L jun. Lennette E H Rickard, E R and Hirst G K. *Pub Hlth Rep Wash* 1941 56 1863

[3] Siegel M , Muckenfuss R S , Schaeffer M , Wilcox, H L and Leider A G *Amer J Hyg* 1942 35 186

[4] Stokes J jun and Henle, W *J Amer med Ass* 1942, 120 16 See *Lancet* 1942, ii 491

[5] Burnet F M *Med. J Aust* 1942 i 673

[6] See *Lancet* 1941 ii, 457

[7] Smorodintzew A A. Gulamow, A G and Tschalkina O M *Z klin. Med.* 1940 138 756

[8] Robertson O H Bigg E , Puck T T. and Miller B F *J exp Med* 1942 75 593

[9] Harris T N and Stokes J jun *Amer J med Sci.* 1942 204, 430

After summarising the various theories as to the causation of the encephalitis, Flexner concluded that the ætiology was still unsolved. More recently, Finley (1938) made out a case for the allergic theory. He pointed out that the local skin lesion was regarded as an allergic immunity reaction and that it was at its acme about 12 days after vaccination, which was at the same time as the incidence of encephalitis and of generalised vaccinia. He argued that experimental evidence proved cerebral tissue to be immune to the virus after vaccination just as the skin was, so that it could be assumed that the specific allergic state of the body following vaccination influenced the CNS as well as the skin and other tissues. If this view be accepted, there seems to be no reason why such a reaction should not occasionally result in simultaneous encephalitis and generalised vaccinia.

I wish to thank Colonel A McKie Reid for his advice and permission to publish this report, and Major J Macaskill and Lieutenant J N Morris for their help in the management of the case.

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Reviews of Books

War Against Disease

MILTON SILVERMAN London Michael Joseph Pp 284 12*s* 6*d*

NOT so long ago the study of history meant the memorising of dates and dynasties, but there is now a wider appreciation that the history of dress or the story of the evolution of the internal combustion engine possess more human interest than the battle of Crecy or the avarice of Henry IV. The history of drugs, too, has its news value. Their discovery and use in therapy have been bound up with the joys and sorrows of mankind, and often drug-hunters have found themselves enjoying curious or droll experiences. The cause of materia medica has now been championed by Mr Silverman, who tells how we came to possess our important drugs—morphine, quinine, digitalis, aspirin and many others. His presentation of the subject is frankly dramatic, and he draws on his imagination for dialogue. His pawky humour, reminiscent of an American talkie compère, enlivens his subject. The painstaking observations of William Withering on foxglove are engrossing; we seem to stand beside the gallant Ehrlich as he battles with new enemy hosts, or by Fourneau, unravelling the tangled skein of Bayer 205. Here and there Mr Silverman has undoubtedly overstated the case: the curing of the Countess of Cinchon makes a good story but it has long been exploded, and the remark "... the very obstetrician who had delivered the great Samuel Johnson," credits that infant purist with a versatility which he would have hastened to repudiate.

Man in Evolution

G DE PURUCKER Point Loma, California Theosophical University Press Pp 389 $2.50

IT is impossible to raise any enthusiasm among scientific men by asserting that one has an intuitive belief that the earth is flat, but there are subjects upon which orthodox science still speaks with a divided voice, and upon such questions there may still be scope for the play of pure thought detached from hard-and-fast experimental methods. Those who subscribe to the system of thought underlying theosophy—upon which this volume is based—hold that many of the postulates inherent in their beliefs have been made in opposition to the scientific dicta of the time and have subsequently been proved to be correct. Some may urge that luck has been on t side and that what were at the time no more than ha guesses have ultimately proved capable of verification scientific methods. After all, a close approximation to the modern atomic theory was current about 400 BC, the doctrine of the circulation of the blood was anticipated by Chinese philosophers some two thousand years before the time of Harvey, and the conception of evolution itself may be traced back to the dawn period of philosophic concepts. The thesis put forward in this book is that man is an extremely ancient—even if not the ancestral—form of life. This is apparently no new creed to theosophists, for it has been a fundamental part of the doctrine since its first inception. Even here parallels may be found in the dicta of those who have approached the subject from other standpoints; more than thirty years have passed since Enrico Marconi enunciated his theory of involution, as opposed to evolution, and claimed to have established scientific proof for his thesis. Professor Sergi dealt severely with Marconi's claims and so far as the orthodox scientific world is concerned they appear to have passed into oblivion; they seem also to have escaped the notice of those whose views they so strangely support. Yet, even with Marconi swept aside, it must be admitted that changing modes of thought have left orthodox ideas on the antiquity of man and of his relationship with the rest of the primates more plastic. Even the die-hards of the immediate Darwinian inheritance admit that man may be a more ancient and a more primitive form than was at one time thought possible. The book gives the orthodox scientist with an open mind a chance to learn the opinions of those who do not follow the experimental method.

Handbook of Ocular Therapeutics

(3rd ed.) STANFORD R GIFFORD, MD, FACS, professor of ophthalmology, North Western University Medical School, Chicago London Henry Kimpton Pp 410 20*s*

THE four years since the last edition of this book have been, as Dr Gifford remarks, the most exciting within the recollection of most of those interested in therapeutics. The use of sulphapyridine in gonococcal ophthalmia and of riboflavin in corneal vascularisation are among the many modern treatments described, and in all that relates to non-operative measures the text is up to the minute. Most of the minor surgical procedures are well dealt with, and the section on recurrent corneal erosion is described in unusual detail. Diathermy for detached retina is touched on, but so little is said that it would perhaps have been better to have omitted it entirely. The list of ophthalmic drugs in common use is especially helpful. The book is refreshingly frank; the author does not hesitate to label a drug as useless where he has found it so.

War Gases and Foodstuffs, Chemical Warfare and Food Supplies

W R WOOLDRIDGE, PhD, MRCVS London Leonard Hill Pp 50 2*s* 6*d*

EXCEPT for some alleged use by the Japanese against China, gas attacks have so far not figured in the present war. There is no guarantee that they will not do so and this country has been foremost in guarding and training its citizens against such a possibility. Since the danger of such attacks is not confined to injuries against which masks and protective clothing offer sufficient defence, we may welcome a work of this kind published at a price which the most parsimonious local authority will hardly begrudge. Foods not stored in air-tight containers may take up almost any war gas from the air around them and might easily be contaminated by contact with liquid "gas." The author notes that decontamination is not particularly difficult, but for the sake of attractiveness and nutritive value prevention is better. He discusses protective storage of foods while being unshipped, in transit and when in storage, as well as the allied problems of protecting farm animals and their foods, on which he is specially qualified to speak. It is almost impossible, he says, to render water-supplies dangerous by gas. The organisation of the contaminated-food service is described and the information should be of value to local authorities; a table at the end shows the effect of war gases on animals with hints for treatment.

MYASTHENIA GRAVIS AND THE THYMUS

The thymus gland, or θύμος, was so named by Galen in the second century A D from its likeness to a bunch of thyme-flowers From the time of Galen, who supposed that it was placed in the mediastinum to protect the vena cava from the pressure of the sternum, to that of latter-day coroners, who have used it in the investigation of death under anæsthesia to protect the reputation of the medical profession, it has remained an enigma Endocrinologists have wooed it in vain Physiologists and pathologists have drawn away from it baffled Not even the anatomists or the histologists have spoken of it with their customary precision, for we are still uncertain whether it has any real existence in the normal adult, and whether the main cells of its medulla are to be regarded as epithelial or endothelial

A mystery of another kind is hidden under the name myasthenia gravis, a disease which is uncommon but none the less notorious for its resistance to both rational explanation and treatment In its earlier stages it is subject to spontaneous remissions, sometimes of long duration, and in recent years its victims have been greatly helped by the work of Dr Mary Walker, who established the value of prostigmin in temporarily alleviating the symptoms Yet in general it has been regarded as more or less hopeless, and many a sufferer has lingered miserably in its clutches only to die in one of the respiratory crises which characterise its later stages From a discussion at the Neurological Section of the Royal Society of Medicine on Nov 19 on myasthenia gravis and thymectomy it seems that this conjunction of two mysteries may result in a real increase of knowledge about both of them The treatment of myasthenia by removal of the thymus gland is not, as one speaker in the discussion averred, an entirely empirical procedure, for it has been known for some years that a certain proportion of thymic tumours are associated with myasthenia gravis and removal of the tumour has occasionally resulted in improvement, or even cure, of the disease Not many patients with myasthenia, however, could be shown to have a tumour in the mediastinum, and it was therefore a logical step to remove the thymus gland itself, which was often enlarged in this disease Blalock and his associates[1] in Baltimore reported last year that they had performed a thymectomy in 6 patients with myasthenia gravis, and had obtained in 3 of them improvement almost amounting to complete remission, there was one death At the RSM James Carson and Geoffrey Keynes reported on the surgical treatment of 12 patients, apparently the longest consecutive series yet recorded Most of these patients had been under observation at the National Hospital, Queen Square, and had been operated on at the LCC Hospital, New End, Hampstead, the first operation having been done in February of this year All the patients had been chosen as presenting the fullest possible picture of the disease and all had responded satisfactorily to prostigmin In addition, most of them had given a positive response to the intra-arterial injection of prostigmin, a delicate clinical test recommended by Blalock in order to clinch the diagnosis Exposure of the mediastinum by splitting the sternum under completely controlled anæsthesia revealed in every case an enlarged thymus gland, a bilobed structure varying in weight from 7 5 to 31 g In 2 there was also a small thymic tumour not demonstrable by radiography Three of the patients died, one from collapse of the lower lobes of the lungs, one from failure of hæmostasis, and one in delirium tremens Of the remaining 9, 3 had experienced complete remission of the disease and had required no prostigmin for periods up to nine months, 4 had greatly improved and could subsist on a much reduced dose of prostigmin, and 2 had not shown any material improvement, though one of these had a considerable overlay of neurosis which obscured the picture Carson said that spontaneous remissions usually occurred only in the early stages of the disease, the symptoms becoming fixed as they progressed The truth of this was demonstrated by the histories of the 12 patients reported on Keynes stressed the fact that all the patients were extremely ill, so that " the maximum hazards had been challenged," the postoperative course in most of them being very stormy and difficult to manage Their management had been in the hands of J E Piercy, surgeon at New End Hospital In addition 3 of the patients had exhibited signs of thyrotoxicosis, one to such a severe degree that a hazardous subtotal thyroidectomy had to be done before thymectomy could be contemplated six weeks later It is interesting, in view of claims made elsewhere[2] to have cured myasthenia gravis by thyroidectomy, that this patient's myasthenia, already severe, became even worse after the thyroidectomy He is now reported to have greatly improved, all his symptoms being relatively slight and his prostigmin needs much reduced Carson reported that the intra-arterial injection test had become negative in the patients with complete remissions of the disease, and less strongly positive in those that had improved There was apparently no correlation between the size of the thymus and the severity of the disease or the results of the operation It was suggested that undetected extensions of thymic tissue beyond the anatomical confines of the gland might account for the uneven results of the operation The best results had been obtained in the patients who were not only the youngest but also showed the most pronounced symptoms

It is to be hoped that this surgical experiment is only the beginning of a real advance in knowledge and treatment It is tempting to suppose that the neuromuscular defect, known as myasthenia gravis and closely resembling curare poisoning in its clinical features, may be due to an internal secretion elaborated by a hypertrophied thymus, though both the speakers avoided any rash pronouncements on the pathology of the glands that have been removed The specimens are in process of investigation In the discussion Russell Brain and R L Galloway announced that they had treated 3 myasthenic patients by thymectomy without result, but the statement by Galloway that none of his patients gave him the slightest anxiety after operation, and by Brain that one of them showed only the bulbar signs of the that it was the bacterial secondary infections which killed most of the 1918–19 victims, let us thank Heaven for sulphonamides

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[1] Blalock, A, Harvey, A M, Ford, F R and Lilienthal, J L jun *J Amer med Ass* 1941, 117, 1529

[2] *Proc Mayo Clin* 1941, 16, no 35

FITNESS CENTRES

WAR, by its calls on the nation's man-power, makes it necessary to replace and supplement ordinary sources of labour, and invests fitness for work with a new importance The disabled man becomes a potential asset Britain has lagged far behind Denmark in finding suitable work for the disabled citizen In 1936–37 in Scotland an insured population of 1 8 million lost 26 million working days on account of illness, and 42% of the time lost was accounted for by illnesses current throughout the whole length of the year The chief contributors to this long-term incapacity were mental and nervous disease, rheumatism, and diseases of respiratory and circulatory systems Many of these cases were long past any hope of reabsorption into industry In 1937–39 an attempt was made in Scotland to tackle this problem by reviewing the illnesses of insured persons as soon as they had lasted three months, to see whether anything could be done to preserve the patient's capacity for work Doubtless the only hope of salvation for many lay in a change of employment, but there was no formal linkage between the central authorities responsible for health and labour In 1935 a British Medical Association committee reported on the undue delay in securing the return to employment of injured workpeople, and in 1938 the Delevingne Committee produced its report on rehabilitation—a report recognising the need for continuity of treatment right up to the time of return to work, but this body was essentially surgical (and mainly "fracture") in its outlook About this time colliery owners in the Midlands were planning measures for the return to working capacity of injured miners, and the rehabilitation centre at Berry Hill Hall in particular has attained a notable measure of success in returning patients to full employment in the pits

The war brought new problems, the Army and the Royal Air Force have their own rehabilitation centres, not always so called, no-one seems to have called them "fitness centres," which seems an obvious name Thousands of patients have been invalided out of the Services, and here again, as in civil life, the disability has more often been medical than surgical Left to themselves these men and women do not do well on their return to civil life, either medically or in work In the autumn of 1941 the Ministry of Labour introduced an interim scheme for the resettlement, and if necessary training, of these ex-Service patients and of patients leaving civilian hospitals with residual disabilities It would be valuable to learn how many cases have been dealt with under the scheme, and in particular how many patients were followed up on their return to civil life and with what results Follow-up is the acid test how many of those placed in employment have held that employment? Early in 1942 the Department of Health for Scotland inaugurated the Clyde Basin experiment Doctors of the area were invited to refer for overhaul (including, where necessary, hospital and convalescent-home care) young people between 15 and 25 who were reacting unfavourably to industrial stress Until recently the scheme did not ensure a change of work where that was necessary in the interests of but the Chief Medical Officer says that the linkage is now being made The recently published white paper on coal contemplates the development of rehabilitative measures, doubtless with a view to the increase of coal output, other trades are interested and it will be surprising if there is not soon a demand for fitness centres for war workers generally Rehabilitation is one of the best examples of social medicine To be successful it must be a three fold conception, aiming at the provision of medical and surgical skill of the highest quality, organised to secure the patient's physical recovery, the preservation and development of those qualities of initiative and "will to recover" found in nearly all patients at the start of illness but so often lost during treatment, and the establishment of a close linkage with the social and industrial background to which the patient is to return after treatment These aims carry certain implications that the medical men participating in the work must be enthusiasts, able to inspire and hold the confidence of their patients, that, while it may be advantageous to secure geographical separation between fitness centre and hospital, medical supervision must be continuous throughout the reconditioning period, so that, for example, the same surgical skill is applied to attaining full movement in the knee as to setting the original fracture, and that the necessary liaison with industry must be not merely with the branch of industry from which the patient was drawn but with the Ministry of Labour—for even in the happiest circumstances some cases will have residual disability which precludes return to old employment, and rehabilitation is useless if it discharges patients to idleness

It seems inconceivable now that we should revert after the war to a system that left the disabled man derelict and demoralised to eke out his miserable years on public assistance But in peace the demand for labour will be less urgent, and without a planned policy the cardiac cripple and the limbless man will again be left to official or unofficial charity, a result economically wrong as well as unsocial, for many of these men can do useful work In times of depression a disabled man cannot hope to hold a job except on merit, he must be able to do his particular job as well as the average man That means that work must be selected to suit his disability, but it must also be work in which he is really interested, and he must be trained until he is efficient at it It is important to ascertain the degree of disability early, to study sympathetically the needs of each case, and to meet those needs so far as practicable Rehabilitation has enormous possibilities, it must bridge the gap between the health services and industry and living conditions which has stultified medical care for years Far too many patients have been discharged from hospital as improved, only to return to conditions of life and work that must inevitably produce a relapse The reconditioning process must be planned It should be associated with hospital care and with general practice, possibly through a regional medical service It should not be confined to particular occupational groups, to particular age-groups, or to particular diseases It will be difficult work, but as SIR WILSON JAMESON says, prevention is coming *to have, even in* the public mind, something of the drama of cure natured tolerance to thinly veiled contempt, regard physical medicine as a convenient refuge for the disposal of rebellious and troublesome sufferers from chronic rheumatism Physiotherapy in their eyes is indebted for its bare existence to the orthopædist, phototherapy is dependent for maintenance upon the dermatologist, electrotherapy is parasitic upon the X-ray department And even within their own ranks, Mr Bauwens finds, physiotherapists have not been without their doubts and difficulties Called upon for a definition they have been unable to agree in what way and to what extent the scope of physical medicine should be isolated and its future defined Yet there is no branch of medicine or surgery where physical methods, either diagnostic or therapeutic, have not some application, even if at present rather vaguely comprehended they should have a part in the management of diseases and injuries and in the maintenance of health He would like to see the medical student instructed in physical medicine at least sufficiently to recognise its opportunities and to make proper use of them A separate qualification is essential, he feels, to place the specialty in its proper relation to the profession as a whole and to attract the younger men into its practice A diploma would ensure uniform teaching and guarantee proficiency A committee should be formed, he thinks, of informed practitioners of physical medicine to plan for this and other advances To encourage research in the specialty this committee should later be replaced by a Faculty of Physical Medicine, and a fellowship of the faculty would be instituted as a higher qualification This parent body would probably give birth to a chair of physical medicine but he would not hazard a guess at this gestation period In the subsequent discussion the idea of a diploma found general favour, though some speakers felt it should not be established until men now with the Forces would be in a position to take it

HIGH VOLTAGE X RAYS

At a meeting of the American Röntgen Ray Society, briefly reported in *Science* for Sept 25 (supplement, p 8), Richard Dresser and John Trump described the treatment of cancer by means of a very high voltage X ray generator, now being used experimentally at the Massachusetts Institute of Technology The electrostatic generator employed is evidently a development of the Van de Graff generator first installed there The working principle of this machine takes us right back to the days of the friction and influence machines of electrostatic fame, and once the first surprise has gone it seems an obvious step to use such methods when the chief requirement is the building up of a really high potential gradient without concern for the fact that the resulting current through the X-ray tube is going to be a mere trickle At the Massachusetts Institute they have succeeded in building a reliable machine on the basis of friction and induction and it works at 3 million volts The electrons speeded by such a potential difference on impact with the anti-cathode give X rays of shorter wave length than the gamma rays from radium By their use a bigger percentage depth dose can be given to the body, this reduces the dose that the skin and overlying tissues have to bear, and on this score is an advance in technique Time will show whether there is benefit from its use in cancer If it should prove that X rays at 1, 2 or 3 million volts really do mean an all-round technical advance in the treatment of malignant disease, then a big economic question will arise Is this country going to provide the money needed to instal and maintain such machines? Lately Osgood and his colleagues[1] of Portland, Oregon, and Berkeley, California have exposed cultures of human marrow to high voltage X rays and to neutrons The effects were compared quantitatively with those produced by 200 kV X rays and by beta rays from radioactive phosphorus They maintain that the major action of these various forms of ionising radiation is to inhibit the onset of mitotic and amitotic division of the cells, they were unable to show any specific wave-length action on the medium they used, and conclude that if there is any advantage in the use of million-volt Röntgen rays it would have to arise from a superiority of depth dosage or a decrease of skin damage

PLANNING FOR HOLIDAYS

Leisure is strictly rationed during the war, yet even in average prewar years only about a third of our population were accustomed, or could afford, to take as much as a week's holiday away from home The Holidays with Pay Act of 1938, must be given its full scope after the war, but as a PEP broadsheet, *Planning for Holidays*, points out, adequate facilities for holidays must also be provided The twin problems are transport and accommodation Railways in 1937 carried twice as many holiday passengers in both July and August as in May, June or September, and rooms at holiday resorts were correspondingly overcrowded Staggering of holidays in industry and schools could reduce the peak cost of accommodation, and improve the amenities at the resorts by spreading the load Increased use of camps and hostels, especially non-commercial ones, will be needed for what may well be a stampede of holiday-starved crowds at the end of the war Holiday facilities might well be developed on a planned basis and a national scale The growth of mushroom holiday towns, straggling and featureless, must be restrained by the control of land development, for these islands are none too large for our considerable population More national parks are wanted, and some of the country mansions of the erstwhile rich, now being used by military and civil authorities, might at the end of the war be developed by the state as people's holiday centres PEP suggests a survey of all holiday quarters and the provision by a National Holiday Centre Corporation of basic holiday accommodation at a price within reach of all wage-earners

GRANULES IN PUS CELLS

Every student must have been fascinated by the purposeful air of the living polymorphonuclear leucocyte seen in living preparations on a warm stage, projecting cytoplasmic processes, it elbows its way through the red cells, humping its nucleus along like a pack These cytoplasmic projections, like the rest of the cell, are filled with refractile granules in a constant state of turbulent dancing activity In early days this motility of the granules was put down to Brownian movement, but Hope Simpson[1] reminds us that this is hardly an adequate explanation He finds pus cells easier to study than blood leucocytes and the best material for his purpose is obtained from thin sero-pus or purulent urine In fresh unstained preparations the pus cell is spherical, with its lobed nucleus squeezed together near the centre of the cell, the cytoplasm is packed with violently turbulent granules The granules can be seen to press on the outer cell boundary to form the tip of a slender cytoplasmic process which then shows rapid, violent, lashing movements, the whole cell may become covered with a wavy coat of such processes and several may join together to form thick strands Other pus cells, such as from sputum in acute catarrhs, have nuclei with lobes spread out and relatively few granules in the cytoplasm, some quite motionless In such fresh preparations the cells live about 3 days, the manner of their death is characteristic The nucleus becomes peripherally placed, the granules collect in a cluster around it and become motionless, often a few granules remain still ranging over the now empty expanse of cytoplasm and then "one by one creep silently to rest," joining the cluster round the disease, give rise to doubts whether these cases were at all comparable with those of **Carson** and **Keynes** None of **Brain**'s patients had been tested by intra-arterial injection and they seem to have been mildly rather than seriously ill and elderly rather than young **Dickson Wright** had performed the operation 4 times, with a remission in one case This successful operation had been done through an incision in the neck, a method which **Keynes** had previously condemned as dangerous and unpractical The second operation had been unsuccessful and the other 2 were too recent for an opinion to be formed **Gordon Holmes** spoke of the effects of X-ray therapy on myasthenia gravis, admitting that good results were relatively few and that he felt no enthusiasm for the method **L A E Laurent** cited 4 patients treated by X rays, of whom 2 were now very well and the others improved **Piercy** mentioned that one of the New End patients had been previously treated with X rays which had made her definitely worse All the speakers referred to the not infrequent association between myasthenia gravis and thyrotoxicosis, and **Brain** in particular stressed the confusion that may arise between myasthenia gravis and thyrotoxic myopathy The fact that the thymus gland is usually much enlarged in primary thyrotoxicosis was not mentioned Perhaps the speakers were wise not to introduce any further side-issues into a subject which already bristled with them

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[1] Osgood E E Aebersold P C Erf, L A and Packham E A *Amer J med Sci* 1942 204, 372

[1] Simpson R. E H *Brit J exp Path* 1942, 23, 188

Annotations

A BOOK FOR RUSSIAN COLLEAGUES

The Anglo Soviet Medical Council, formed soon after the Nazi attack on the Soviet Union, has encouraged the flow to this country of Russian medical books and journals, and recently articles on new developments in medicine in the USSR have reached our medical journals via the council To obtain and publish Russian work is, however, only half the task which the council have set themselves, during the last year their team of 35 translators has been occupied in turning into Russian *Reviews of British War Medicine*, written by eminent members of our profession This difficult and highly technical task has now been completed and the book was formally presented by Sir Alfred Webb Johnson, president of the council, to Mme Maisky at a meeting at Gaumont-British Film House on Nov 23 Three thousand copies of vol i of this work, containing 26 articles, are being sent to the Soviet Embassy for dispatch to the USSR Their distribution, it is hoped, will not only be helpful to our Russian colleagues but will further the increasing understanding between them and ourselves Sir Alfred announced that the second volume, which will deal mainly with thoracic surgery, was almost ready for the press Mme Maisky thanked the authors and translators of the book and paid tribute to Dr Elizabeth Bunbury, hon secretary of the council, who had coordinated the translated material and prepared it for press Mr Ivor Montagu spoke on Soviet scientific and educational films as a prelude to the showing of two such films[1]

APPENDICITIS AND GASTRO-ENTERITIS

The patient with symptoms of gastro enteritis who is also tender in the right iliac fossa may raise difficulties, and Quigley and Contratto[2] have studied the records of 100 Harvard undergraduates with gastro-enteritis and 60 with appendicitis confirmed pathologically in the hope of finding some diagnostic pointers to in the diagnosis of such cases Pain is always a minent feature in appendicitis but is rarely s Murray,[3] in the records of 1000 cases, found that began in the right iliac fossa in 10% and shifted t usually from the epigastric or umbilical region, in 90% Quigley and Contratto found that 64% of enteritis cases had colic, while 69% of the appen *patients had steady pain Two-thirds of patients* gastro-enteritis but only a third of those with appen were unable to localise the pain Vomiting was as common in gastro enteritis as in appendicitis (38%) Abdominal tenderness of some degree was present in cases of appendicitis, nearly always in the right lo quadrant Gastro-enteritis caused tenderness in than half the cases, and when present it was more diffuse, being nearly as often above as below the umbilicus Cough pain, and rebound and rectal tenderness, though each present in only 37% of cases of appendicitis, were of great diagnostic significance because they were never found in gastro enteritis Only slight fever was usual in both groups, a temperature of over 101°F was recorded in 9 cases of gastro enteritis but in only 1 of appendicitis American surgeons make more use of leucocyte counts than we do Quigley and Contratto found that the average count in the appendicitis group was 18,300, against 12,400 in gastro enteritis, none of the appendicitis group had a count of less than 10,000, whereas more than a third of the others had Diarrhœa was of course usual in gastro-enteritis, whereas only 4 patients with appendicitis had loose stools and 2 of these had taken cathartics From these early cases in young adults the conclusions reached were that an explosive onset, colicky abdominal pain, vomiting, diarrhœa, high fever, a white cell count of less than 10,000 and bizarre or absent abdominal signs point to gastro enteritis An insidious onset, continuous abdominal pain, and tenderness in the right lower quadrant with true muscular spasm all point to appendicitis, and rebound or cough tenderness referred to this quadrant are almost pathognomonic In the early stages repeated examination will aid the diagnosis and a laparotomy must sometimes be done to be on the safe side "When in doubt operate" is a safe slogan but an unsatisfactory one, for it will mean several weeks off work in some cases which would have recovered in a few days if left to nature and kaolin

THE STATUS OF PHYSICAL MEDICINE

At a time when postbellum planning has assumed epidemic proportions and characteristics it was only to be expected that the practitioners of physical medicine should prove susceptible to the infection Some anxiety in respect to their position in the future was warmly expressed by Mr Philippe Bauwens in his presidential address to the appropriate section of the Royal Society of Medicine In a kind of apologia pro vita sua—it was, he said, his only excursion into medical politics—Mr Bauwens traced the history of his specialty The earlier representations of physiotherapy—balneology, heliotherapy and thalassotherapy—arose spontaneously and as a result of climatic peculiarities in different localities They owe their existence, in fact, to geographical rather than scientific considerations, with the result that monopolies and rivalries have shadowed their exponents with a suspicion of vested interest Actinotherapy and hydrotherapy are also products of natural phenomena, but electrotherapy, having more sophisticated associations, developed as a sort of junior partner of radiology *In time came* massage, remedial exercises, manipulations—and he might have added chiropractics, whose practitioners enjoyed a specialty without systematic teaching or academic recognition The uninstructed, with attitudes ranging from good pasteurisation is impracticable in rural areas because of distribution difficulties In many rural areas abroad—for example throughout Ontario—pasteurisation is enforced, and there seems to be no reason to suppose that compulsory pasteurisation is any less practicable in rural England than in rural Ontario Frazer's pamphlet is so fair and thoughtful that it is unfortunate he should have based his argument on the somewhat unusual conditions in Cumberland He is careful to remark and repeat that he is only dealing with conditions there, but opponents of pasteurisation are not likely to respect that caveat and may try to apply his views to the country generally

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[1] Reviewed in the *Lancet* of Sept 26, p 383

[2] Quigley, T B and Contratto, A W *New Engl J Med* 1942, 226, 787

[3] Murray, G *Canad med*

Special Articles

FREEDOM FROM WANT

FIRST THOUGHTS ON THE BEVERIDGE REPORT[1]

"Primarily social security means security of income up to a minimum, but the provision of an income should be associated with treatment designed to bring the interruption of earnings to an end as soon as possible"—SIR WILLIAM BEVERIDGE

THE greatest single cause of ill health and sub optimal health, mental and physical, is not a virus or a bacterium but poverty So it is the doctor's duty to fight poverty with even greater vigour than he fights the diphtheria bacillus A complete plan for this campaign has now been placed before us by SIR WILLIAM BEVERIDGE, and if when we have studied it from our special point of view we are satisfied that it is a good plan it will be up to us to support it with all our might The picture Beveridge paints can be studied from two main angles—that of the individual and that of the whole country

Consider the individual Whoever you are so long as you are in work, you will be called on to pay 4*s* 3*d* a week if you are a man, or 3*s* 6*d* to 3*s* 9*d* if you are a woman You will make this payment by buying a stamp from the local Security Office Thus, there is to be a flat rate of contribution for all If you are an employer, you will have to contribute about 3*s* a week for each employee to the security fund Thus, the poll tax on industry which the present insurance schemes embody is to continue In return for your contribution, you will be insured against sickness or accident and unemployment, at the benefit rate of 40*s* a week if married, or 24*s* a week if single or with gainfully occupied spouse You will receive a basic retirement pension at similar rates, at 65 if you are a man or at 60 if a woman, but only if you cease work, if you go on working your pension will go up 1*s* or 2*s* for each extra year you work You will get a marriage grant of up to £10, a maternity grant of £4, and a funeral grant of £20 If you are disabled, you will receive a pension related to your previous earnings, not exceeding £3 a week and not less than your sickness benefit, if the disability is total For each child after the first you will receive 8*s* a week, and if you are drawing benefit for sickness or other reasons you will also get 8*s* a week for your first child If you are a working woman and have a baby you will get 36*s* a week for 13 weeks to make up for your loss of earnings and encourage you to stay away from work as long as is really necessary, if you become a widow, you will get 36*s* a week for 13 weeks, and if you have no children you will be given training in a new job if you need it, if you have children to care for, you will get a guardian's benefit of 24*s* a week at the end of the 13 weeks as well as children's allowances Whoever you are, if you are out of work for more than 26 weeks and there is no job in your old trade, you will be trained for a new one Finally, your contributions will cover medical treatment for you and your family at home, in hospital and at a rehabilitation centre, but when you are in hospital, you will have to pay the 10*s* a week out of your benefit which you would otherwise be spending on food and heat and clothes at home That in outline, is the plan as it affects us all The report deals in detail with every human financial situation that seems likely to arise, and each is carefully provided for It is, in fact, a complete blue print for implementing the fifth clause of the Atlantic Charter in Britain, it offers us for the first time freedom from want

Turning now to the picture as a whole One of Beveridge's prime assumptions is that Britain in future will be free from mass unemployment If a prosperous community shares its purchasing power equitably, there will be plenty for all But in a depression of trade, with real scarcity of the products of labour, no amount of redistribution of wealth will supply the necessities of life to all who need them It was not part of Beveridge's duty to prescribe cures for unemployment, but economic scientists, and even some politicians, know that such cures exist The difficulty lies rather in their application The annual cost of the scheme, working full blast, is some 850 million pounds, or about an eighth of our present national income This is not an unreasonable price to pay About £130 million of this is to come from employers, and £520 million from the Exchequer largely in the form of income-tax Thus, the employer will be called on to pay three times—as an ordinary citizen, as an employer, and as an income-tax payer It may be argued that this is neither fair nor good for industry A simple answer would be to abolish the employer's contribution and increase that from the Exchequer This would combine the benefit of a uniform payment for all with graduated payment (via income-tax) based on capacity to contribute

A fortnight ago we published the interim report of Medical Planning Research That its conclusions should have come so close to Beveridge's is not a coincidence, though it is a tribute to the economic skill of our younger medical planners, the problems examined were the same MPR's benefits were slightly more liberal, but slightly less comprehensive Their total budget was 1050 million, whereas the Beveridge budget is 850 million This difference is accounted for by MPR's inclusion of first children for allowances—an extra cost of 200 million MPR proposed graded contributions for all MPR proposed a social security board, and gave cogent arguments in favour of this form of administrative machine, Beveridge proposes a Ministry, with an additional board to run voluntary industrial insurance, but gives no detailed arguments for his first choice On the purely financial side it seems to matter little, but on the medical administrative side, untouched by Beveridge, doctors may hold strong views On the central aim medical planners will surely feel that they can give Beveridge their full support

MEDICINE AND THE LAW

Punishment under the Scabies Order

RECENT prosecutions at Leeds for offences against the Scabies Order may have useful effect in informing the public of the measures available for checking this very contagious disease The medical officer of health, Dr J Johnstone Jervis, told the magistrate that the Leeds corporation had opened five centres for treating patients Since last June some 1500 cases had been notified, from these notifications more than 4000 other cases had been discovered The Scabies Order was made by the Minister of Health a year ago under Defence Regulation 33A Under its authority a medical officer can inspect premises accommodating verminous persons and can require those persons to submit themselves to medical examination and to present themselves for, and undergo, cleansing and treatment Where the order relates to a child, the parent or guardian must do what is necessary and must comply with any reasonable requirements or instructions In the Leeds cases a man and three women were summoned for failing to attend for examination two of the women were also charged with failing to submit their children for examination Another woman, stated nucleus The normal turbulence of the granules may be ended by exposing them to a cytoplasmic poison like 1% methylene-blue, but then the end comes suddenly when the cell barrier gives way and the stain enters the cell Hope Simpson concludes that Brownian movement cannot explain so patently vital a phenomenon as this granular turbulence , it is something more, he thinks, than a mechanical consequence of the colloidal nature of the cytoplasm, it is in some way an expression of the individual properties of the granulocyte

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[1] Social Insurance and Allied Services Cmd 6404 HMSO 2*s*

DIAGNOSIS OF PANCREATIC DISEASE

ACUTE pancreatitis is almost invariably associated with a definite rise in the diastase in blood and urine The test may readily be performed by a simple modification of the Wohlgemuth technique, and the apparatus and technical skill required are hardly more complex than those used in a routine urine examination , if the equipment is always kept at hand the answer may be had within a few minutes But a positive result may also be obtained in cases of cholelithiasis and cholangitis In these conditions, however, there is usually some suggestion of jaundice , so a considerable rise in blood or urine diastase without a rise in the icteric index may be taken to indicate an attack of acute pancreatitis With normal diastase values during the first two days of an acute disease it is fairly safe to rule out acute pancreatitis Loewi's mydriasis test appears to be unreliable The diagnosis of chronic pancreatitis can be confirmed by several laboratory tests It may be associated with fatty stools (traditionally with a low percentage of split fat), microscopic signs of undigested protein in the fæces, abnormal glucose-tolerance curves, sometimes with glycosuria, high blood- and urine diastase values, high blood-lipase, and a deficiency in many of the pancreatic enzymes as obtained through a duodenal tube These tests do not detect the lesser degrees of pancreatic disorder and not one of them is positive in all cases of severe chronic pancreatitis , moreover, with some of them (for example, high fæcal fats and abnormal glucose tolerance) many conditions other than pancreatitis give positive results The secretin test developed in Stockholm by Hammarsten, Agren and Lagerlof is more specific in both acute and chronic pancreatic disease In a recent monograph Lagerlof[1] summarises the Stockholm technique and adds a further series of cases proved by operation or autopsy to be of pancreatic disease After giving an intravenous injection of secretin, the Stockholm workers quantitatively recover all gastric and pancreatic juice for the next 60 minutes through a double tube, the outer section of which opens into the stomach and the inner—30 cm longer—into the duodenum Corrections for regurgitation of duodenal contents into the stomach can thus be made by determining either bicarbonate or bilirubin in the gastric juice The volume, and the bicarbonate, amylase trypsin and lipase content of the juice are also determined In 15 out of 19 cases of acute pancreatitis there was a decrease in the amylase with no decrease in the volume of the juice All cases showed a rise in blood and urine amylase , this test, which should always be performed in suspected cases of pancreatitis is often positive only during the first 2 days of the illness, whereas the secretin test is usually positive during the first 2 weeks In all cases of chronic pancreatitis there was a decrease in the volume, the bicarbonate content or the enzyme content of the juice, or of all three In a simplified test Lagerlof determines only the amylase and bicarbonate, the two most stable constituents Absence of the amylase indicates acute pancreatitis and of bicarbonate chronic pancreatic disease, for the bicarbonate was reduced in 19 of the 23 cases of chronic pancreatitis This was also true for 2 out of 4 cases of cystadenoma and 6 out of 9 cases of carcinoma In 67 healthy persons and 44 cases of disease of the gastro intestinal tract and uncomplicated disease of the gall-bladder and bile du the values for all of the indices of the secretin test normal Abnormal values were, however, found acidosis and dehydration This compares more than favourably with other methods now in use for the diagnosis of pancreatic disease in its milder forms and will doubtless be given further extensive trials when happier days bring supplies of purified secretin and time for duodenal intubation

GOOD CHEER AT CHRISTMAS

" WE are feeling cheered by the recent good war news , may I suggest that we should provide the means of cheerfulness and encouragement for our beneficiaries on Christmas Day " In these words Sir Thomas Barlow prefaces a final appeal for the Christmas Gifts fund of the RMBF More than £1000 is needed to make a gift of £2 to each of those who are dependent on the fund for comfort, warmth or even enjoyment on Christmas Day Contributions should be addressed to the hon treasurer, Royal Medical Benevolent Fund, 1, Balliol House, Manor Fields, London, S W 15 and cheques should be made payable to the " Christmas Gifts Fund "

A RURAL M O H CONSIDERS PASTEURISATION

IN a comprehensive report to the Cumberland county council on milk and some of its problems Dr Kenneth Frazer, county MOH, points out that Government policy in recent years has tended to increase the consumption of milk, with priority to certain classes, without any concurrent steps to raise the standard of purity Existing legislation fails to provide either clean or safe milk, and he doubts if any substantial improvement is possible under existing conditions Certainly the figures he submits for Cumberland suggest little progress So far most experts will agree with him, but he takes an unusual view of pasteurisation While admitting that it has no detrimental effect on the nutritional value of milk, and that properly carried out it makes milk safe, he thinks that it cannot offer complete protection because of the opportunities for human error in carrying out the process The need for more fool proof methods of pasteurisation is admitted by all authorities, and they could be achieved He would surely do better to emphasise the need for establishing such methods He does not favour the extended use of pasteurisation in Cumberland, reviving the old argument that pasteurisation is an admission of failure to raise milk to a satisfactory standard of purity Actually the evidence is the other way as Wilson[1] has shown compulsory pasteurisation might be used to raise the standard of cleanliness of milk production throughout the country, rather than to lower it In 1934 the Committee on Cattle Diseases coupled their pasteurisation recommendations with another that all milk, if to be pasteurised or not, should reach a certain standard of cleanliness on the farm Frazer suggests that if higher standards of cleanliness were attained pasteurisation would be unnecessary , but *clean* milk has little to do with *safe* milk—clean milk as readily as dirty can convey the acute infections or the tubercle bacillus LCC figures show that the percentage of tubercle bacilli is, year after year, higher in " accredited milk " (clean milk) than in raw ungraded milk In Cumberland, Frazer points out, there have been few milk-borne epidemics and little non-pulmonary tuberculosis , but he mentions 2 milk borne outbreaks of Sonne dysentery, 2 of sore throat and some cases of undulant fever , and, with 80 notifications of non pulmonary tuberculosis yearly, the bovine proportion is probably not negligible, though he makes no attempt to estimate it But an area may go for years without epidemics, and it would be as culpable to allow the use of a polluted water supply on the ground that no harm had come of it as to perpetuate the sale of unpasteurised milk His last point is that n housing standards in the field covered by the report, ust have been slight That no association was found here between housing and child health does not necesarily imply that there is no such association in other arts of the country

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[1] Lagerlof, H O *Acta med scand* 1942, suppl 128

[1] Wilson, G S The Pasteurisation of Milk, London, 1942

The infant death-rate in the area in 1930 was 77 per 1000 live births as compared with 58 for England and Wales The rate for all unskilled classes in the country was a little lower than the Durham rate The study shows that in 17,000 births distributed among the families of miners, other manual workers, and black-coated and independent workers, the miners' children had the highest infant mortality This is the nearest approach Mrs Burns makes to a study of economic causes, but unfortunately she does not tell us what proportion of fathers in each group was unemployed or for how long At that time unemployment among men was between 30% and 40% for the whole area and in two districts was over 60% the county (excluding county boroughs) had 50,000 people on domiciliary relief, including 20,000 children It must be borne in mind, too, that many of the younger and hardier men and women, probably those with small families, had left the county in the preceding few years, which would mean that the larger families would predominate in the study , and this and the other reasons given make it difficult to apply the conclusions reached to the country as a whole

THE BIRTH-RATE

She attributes the improvement in the mortality-rates in the last few decades mainly to the declining birth-rate But she is mistaken in suggesting that family limitation has not spread to the unskilled and semi-skilled sections of the populace Innes[7] has shown that unskilled and semi-skilled miners reduced their fertility between 1921 and 1931 to a greater extent than almost any other large occupational group in the community The reduction in the unskilled was by half, in the semi-skilled by 48%, and in mine-owners and skilled men by 28% , by 1931 the fertility of the unskilled men was only slightly higher than that of the mine-owners, a notoriously infertile group And indeed between 1911 and 1931 Durham registered the greatest fall in the gross reproduction rate of any county—by 0 86 as compared with 0 51 for England and Wales Mrs Burns deals rather cursorily with nutrition, but says much of value about the relation of good antenatal, maternity and child welfare care to a low infant and maternal mortality The twice repeated statement that it is more dangerous to be a miner's wife than a miner is not borne out by the Registrar-General's Decennial Supplement But despite these blemishes the study has been made in a courageous and pioneering spirit and brings a great deal of material under review —R M T

PALESTINE

JEWISH VOLUNTEERS

PALESTINE being mandated territory there is no conscription there, but many members of the Jewish population have volunteered for the Army and the ATS Since it was announced that Jewish units would be formed the numbers volunteering have increased, and those of military age who have not joined up are being somewhat coldly treated Every possible help is given to the families of men in the Services , members of the medical association have undertaken to treat them free or for very small fees, and the staff of hospitals have agreed to work ten hours daily without overtime pay in order to release colleagues and keep the hospitals in full action

MEDICINAL HERBS

After several years of experiment, the Agricultural Station in Rechowoth last year began the cultivation of medicinal plants on a commercial scale The scope of the experiment has so far been modest but it promises well Flowers are also grown to make perfumes The medicinal herbs included chamomile, with which 6500 sq m was planted and yielded a crop amounting to 20% of the estimated annual consumption in Palestine , *Datura stramonium*, formerly imported from Europe and now scarce in England as well as Palestine, with which 1000 sq m was planted; hyoscyamus (1000 sq m), peppermint (over 140,000 sq m), *Pimpinella anisum* , fennel and thyme

THE HADASSAH HOSPITAL

In Jerusalem the hospital has opened a new 20-bed typhoid ward for children Similar wards are being set aside for this purpose in other hospitals throughout the country

ACUTE INFECTIOUS MONONUCLEOSIS

Typical cases of glandular fever in adults have been reported in Jerusalem since 1936 Dr E Lyon distinguishes three varieties—tonsillar, pharyngeal and septic —and recommends in severe cases the intravenous injection of convalescent serum, 60–300 c cm , combined with sulphanilamide

HEALTH SECOND FRONT

THE report of the Chief Inspector of Factories for 1941 records a substantial increase in reportable accidents The approximate accident rates per 1000 employed were

	1938	1941	% increase
Male adults	40	50	25
Female adults	9 5	18	90
Male young persons	43	52	21
Female young persons	14 5	18	24

Thus the percentage increase for adult women is by far the biggest, but the rates for females, both adult and younger, are still happily a long way behind those for men These figures lend point to the Communist Party's memo on Britain's health services[1] This is not a plan for the future but a series of proposals for immediate action aimed at stepping up industrial production by reducing loss of time through illness and accident First, attention is drawn to the need for making workpeople think in terms of health No-one who has seen safety devices neglected except when inspectors are around, aisles blocked and lavatories defiled will doubt the need for waking up the workers themselves to their needs The suggestion of a "Workers' Health Inspectorate" has a good democratic touch about it , it would do much to offset the effects of paternalism and stimulate reluctant employers The factory doctor and nurse, and the welfare officer are spoken of as natural allies , if this point of view can be made general the work of these specialists will be greatly helped

Next, the efficiency of the health services is considered The most serious bottle-neck is in the supply of nurses The memo urges the need to utilise the married women who have given up nursing, and to get back to nursing the 5000-odd senior nurses who now give their time to non-nursing duties (home sisters housekeepers, laundry supervisors, &c) But more important still, in the Communist view is the cutting out of all non-essential work This should be done, say, by joint advisory committees of staff and management, analogous to joint production committees in factories, whose members should represent all types of hospital workers Among the subjects worth studying the memo suggests the unnecessary routine ward clerical work (sometimes now done by hand in duplicate), placebos and unnecessary medicines (no four-hourly mixtures unless absolutely essential), and the establishment of a cafeteria system in all staff dining-rooms The joint committee should also consider methods of saving the time of outpatients—itself often a serious industrial loss—as by providing evening clinics It should watch the food of both patients and staff to check overcooking and monotony. Nurses' homes should be run by committees of nurses and not by senior sisters On tuberculosis, industrial medicine, fractures and accidents, and the occupational risks of coal-mining, the Communist Party thinks that reform must come from above, though the impetus may come from below The Government's new tuberculosis plans will meet the case as set out here and the new medical inspectors of mines will also be approved On the question of wages and working conditions, the memo encourages nurses to join a trade-union, and the party's view is that the betterment of the health services is inextricably linked with the building up of the trade-union movement within them , ideally, says the memo, there should be one trade-union for all workers in the health services to be suffering from active scabies, was summoned for failing to attend at the infirmary for treatment The stipendiary magistrate, having obtained from the five defendants (all of whom lived in the same house) an undertaking that they would obey the directions, adjourned the proceedings for a week to see if their promises were carried out If they complied with the requirements, he said, they would each be fined £1 for the previous refusals, if they failed to do so, it would be a serious matter

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[7] Innes J W *Milbank Memorial Fund Quarterly*, 1941 19, 22

[1] Britain's Health Services Issued by the Communist Party of Great Britain 16, King Street W C 2 1942 Pp 40 6*d*

Some of us are inclined to complain of the multiplication of crimes created by defence regulations and by the orders made thereunder The offences, we protest, are not always conspicuously related to the moral code In the present instance the law and its enforcement have an educative value in inculcating the duty towards one's neighbour

The Typhoid Carrier

If it be an antisocial act to spread disease by neglect of personal cleanliness, there is no obvious moral obliquity in the case of the unconscious carrier That he can create legal as well as medical problems is shown by a civil action for damages arising out of the typhoid epidemic of 1936 In Model Farm Dairies (Bournemouth) Ltd *v* Newman, a case lately noted in the *Solicitors' Journal*, a dairy company sued a farmer for his alleged negligence in supplying milk which was said to contain typhoid germs The farmer sought to protect and indemnify himself by claiming in his turn against X, a third party If the milk on his farm was infected, then, he contended, the infection was caused by drainage from premises occupied by X whereby the stream running through his farm was polluted In the preliminary skirmishes with which the litigation opened, the farmer's legal advisers asked leave to administer an interrogatory to X to compel him to say whether he was not, in 1936, a carrier of the typhoid germ This, said X, was not a fair question, it put him, he suggested, at a disadvantage because he might have to admit something resting on the opinion of an eminent physician who had since died Croom-Johnson, J, before whom the technical propriety of this interrogatory was argued, disallowed the question The Court of Appeal, however, has allowed it to be put Lord Justice Goddard found an analogy in the cases arising over accident and life insurance It is by no means unknown for interrogatories to be administered in those cases asking whether a person suffers (or has at some period suffered) from a particular disease, or even whether his parents suffered from the disease In the case before the court the defendant farmer might be no better off if X answered that he was not, to the best of his knowledge, information and belief, a carrier On the other hand, were the answer in the affirmative, the farmer would be at a real disadvantage if this interrogatory, clearing the ground in advance of the trial, were disallowed

INFANT AND MATERNAL MORTALITY

We are ill-informed about the causes and pattern of reproductive waste, infantile and maternal mortality and stillbirth, and about the total number of deaths directly and indirectly due to maternity, the rate of infant mortality and stillbirths by order of birth and age of mother, the incidence of spontaneous abortions, and the relation of mortality to size and structure in British families Miller [1] has revealed defects in the classification of infant deaths, and the ages of childbearing appear for the first time in the Registrar-General's annual review for 1938, now available [2] Yet without the full facts we are handicapped in planning social services Planners have often had to rely on public-spirited workers to garner new facts and among these must be counted Mrs C M Burns who has published a study [3] of infant and maternal mortality in the County of Durham, based on the records of health visitors for the years 1930–37 She sought information under four heads

1 The influence of the age and parity of a woman on her own chance of survival in childbirth and for five years after the child's chance of survival for five years, the child's chance of death before or during birth, in the first month of postnatal life, between 1 month and a year, and from 1 to 5 years

2 The influence of a high death rate at any stage death rates among the same group of children

3 The influence of the rate of reproduction on the of survival of mother and child

4 The possible effect of such social factors as the occupation, housing and legitimacy on the conclusions from the biological findings

She reviewed 17,049 births in 1930, the history of survivors for the first five years of their lives, and history of previous pregnancies in the families Over two-thirds of the work is concerned with mortality but she nowhere states the number of on which she bases her report Calculating from rates given there were about 2452, of which 656 stillbirths, 1270 infant deaths and 526 deaths the ages of 1 and 5 Another calculation seems to that these figures include 108 deaths of illegitimate dren and 131 of children of multiple births A total 2452 deaths divided into four age-groups (still neonatal deaths, and deaths between 1 and 12 and 1 and 5 years) divided again into birth rank, further subdivided according to maternal age gives very small number of deaths in each group M the influence of illegitimacy and of multiple births incidence of which seems to rise with increasing rank) are difficult to assess There is an abnormally twinning rate in Durham, responsible for 25% of excess stillbirth and infant-mortality rates found over the rate for the whole country These factors the small numbers of deaths reviewed make some of conclusions rather shaky The figures must be accepted with caution as indications rather than as

THE CHILD'S CHANCES

Her findings confirm that too rapid breeding is to mother and child and that very early and very childbearing are associated with a high infant mort These findings, though not new, illustrate how marriage is favoured in one section of society because maximal earnings are attained early, and postponed other sections where the maximal income is not until middle age The lowest death-rates were found among first second and third children born to mothers between the ages of 20 and 35, and fourth and fifth children born to mothers of 35–40 Of children born first children had the lowest death-rates The of stillbirths per 1000 total births were 43 for births, 26 for second, 32 for third and rising to 64 seventh and later births Late children of large families had a high mortality before, during and after birth, and up to 5 years of age At all stages of family, births to older women are more often associated with stillbirths and neonatal deaths than births to young women

Unlike other workers, she finds no association between housing space and child health Hart and Wright [4] in their study of tuberculosis found housing to be important, and the Registrar-General [5] noted a high degree of correlation between mortality and housing even when latitude and social status were constant Stocks [6] showed in his study of child mortality that, at constant density per acre, the death-rate increased step by step with increasing density per room Statistical snags already noted are numerous in this section of Mrs Burns's report, thus the numbers of deaths in each group are not noted, though they must be small, and it is not stated whether illegitimate and multiple births are included The disturbing effects of rent and family income are not studied, nor are the diseases causing death considered The tables combine urban and rural experience but rural overcrowding is in many ways different from overcrowding in towns, besides, after the first month or so the acute infections become important causes of morbidity and mortality and housing conditions probably play some part in their spread Her study deals with a population which according to the Registrar-General is 52% rural and 48% urban (the county boroughs were excluded from the investigation) In 1931 in England and Wales as a whole, only 20% of people lived in rural areas, 34% in urban districts and the remainder in London and the county boroughs At that time Durham was the worst housed county in England and the degree of variation

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1 Miller, F J W *Lancet*, 1942, i, 269
2 Registrar-General's Annual Review 1938, part II, civil
3 Burns C M Infant and Maternal Mortality in relation to Size of Family and Rapidity of Breeding Pp 247 5*s*
4 D Arcy Hart P and Wright, G P Tuberculosis and Social Conditions in England London, 1939
5 *Statistical Review* text, 1934
6 Stocks, P *Proc R Soc Med* 1934, 27, 1127

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[2] Innes J W Milbank Memorial Fund Quarterly 1941 19, 22

[1] Britain's Health Services Issued by the Communist Party of Great Britain, 16 King Street W C 2 1942 Pp 40 6*d*

In England Now

A Running Commentary by Peripatetic Correspondents

PSYCHOGENIC asthma is a very odd thing I know mine was psychogenic because I could always beat it by a crude bit of psycho applied before the attack During the attack the only thing to do was to read a book in a position of orthopnœa and await the conclusion After two hours of this I usually fell asleep, with the light still on Getting up to turn off the light I found to be fatal—*asthma is twice as bad in the darkness* It is also vital not to cough unless it is absolutely inevitable , one gets into a vicious circle of impotent coughing But what I still don't know is why I ever got the attacks , or, if you like, why I sometimes didn't I never had them at school , at Oxford I rowed boats with the success of the over-compensated I never had them sleeping in the open, even when it rained all night and we didn't have a tent But at some ten different houses in the holidays I had asthma like fun It used to start with prodromal symptoms between tea and supper , your lungs didn't quite expand properly and my mother used to notice my shoulders hunching as the accessory muscles started in, but it wasn't what you'd call dyspnœa The real dyspnœa started about two in the morning and made one feel not only breathless, which was endurable, but remarkably stupid, which wasn't (Our chaplain at Oxford, a confirmed asthmatic, could never remember anything , he once asked a man if it was he or his brother who was killed in the war) And then I discovered the pyscho The first essential was to be busy all day, and leave a few things unfinished Then you would say to yourself, " How very nice to wake up with asthma in the night , then I could write to Auntie Vi " Nowadays I can say something like this, and with justification, every single night (finals on December 8) And asthma ? Never heard of it There is obviously some quite simple, even crude, psycho-analytical explanation, but I wish I knew what it was It works so very much better than ephedrine

* * *

On a cold grey afternoon early in November I had to look for the public lavatories at the end of the street, for the mortuary lay behind them A man on our panel had died without consulting us and the coroner wanted to know why A tall, gaunt policeman half-opened the door for me and I stepped from the cold wind to a colder silence and the glare of electric light Under a stained waterproof sheet I found that which I sought, but I did not know him In the next compartment was the body of a young suicide , the entry wound was just above the right ear and the back of the head was cratered, but the front hair, forehead and face were like some proud Apollo's A fleeting suspicion crossed my mind that those who spurn their living days see immortality The policeman had a bad cold , he told me he had been up for the last two nights, his overtones echoing from the bare walls, and, as he blew his nose, the smell of eucalyptus gaining on that of disinfectant and the fleshy smell of cadaver We grew silent , my thoughts, usually so objective, turned inwards, and I felt as I used when I read the stories of Dostoyevsky Suddenly came the slamming of a car door, the jingle of keys, and the brisk step of the pathologist Here was a man who carried an overpowering atmosphere with him—of the home, the club, and probably the golf and rugger world He chatted as he changed, but the long incision with its single by-pass, although it was made with verve, was in silence The costal cartilages cracked almost merrily and except for the staccato verdict the examination proceeded with mute zest It was not till the last brisk stitch was tied in perfect symmetry that I realised what had been running through his mind—" By Jove, if we corner Rommel "

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Barring accidents, one has a reasonable chance that a posting in my particular branch will last for six months, so when within a fortnight of arrival at a hospital unit in an agricultural district I came across a pedigree Large White sow one week off farrowing with her second litter offered for sale at £10 I decided to take a chance on seeing her through at least one reproductive cycle and bought her She was cheap because very little meal is available to farmers for pig-keeping, and *there is is sold at a price* which in relation to the c price of fat pigs leaves very little in it Now the pi not owe its well-established position in agricu systems all over the world to its capacity to consume convert rapidly into meat large quantities of slop meal , that is the dependant position into which it w forced by our decadent prewar agriculture , it served an elaborate catalyst to the food-conversion industry and some even thought they saw the day coming when laboratory controlled tissue cultures would altoget displace the pig Pigs qualified in the dawn of agri culture for the position they hold because of thei fecundity and also for their capacity to survive lean times and yet be ready to turn the days of plenty to good account Thus, a sow is mated when one year old and thereafter rears two litters of 8 pigs a year (that is taking the average for the country , my sow has reared 12 fine pigs), and her useful life is 3 *to* 4 years However, it was only after a holiday in Jugoslavia 5 years ago that I fully realised the valuable part pigs can play in serious farming

The land I'm thinking of was farmed by peasants, their houses and buildings grouped together in a village which was surrounded by wide unfenced tracts of arable land divided into separately cultivated small holdings *Wheat and barley were the principal crops, but each* farmer kept up to half a dozen pigs housed at nights in his homestead and grazing collectively by day under the care of a communal swineherd It was January then and the first falls of snow had come but still the pigs continued as they had been doing since the harvest in late July picking their living off the stubbles It was an entertainment to watch the herd *returning about* teatime down the village street, each group breaking off and trotting up to its own yard for the evening swill, banging and squealing impatiently if the owner had carelessly left his yard gate shut This is no isolated local phenomenon—herds of swine were a feature of the Bible countryside and no-one supposes that swineherds were a product of the imagination of *our classical* authors For the fact is that there is no way of harvesting grain, not even the latest combine threshers, that can prevent a spillage of less than 5%, and with ordinary methods and the average harvest weather in this country the loss is commonly two or three times that To leave so much on the ground is only possible in an age of reckless plenty , enormous numbers of *poultry could recover* some of it but it is impossible to maintain them for the rest of the year , and so unless it is to be wasted the pig must pick it up, grow large and healthy and prepare himself for the finishing stages of fattening in a stye Of the pig's frugality also the forests of Jugoslavia afforded an illustration, for in them lived the wild boar, the most prized game of *my host* It was not very *much smaller* than the domestic pig, yet without any artificial feeding, or, I was told, ever raiding the corn fields it maintained itself in excellent condition I still recall with relish the joints of fat wild boar which had been pickled and then stewed in red wine

My sow farrowed, as most do, without obstetrical aid *and proved a good grazer* and a splendid milker, but there was little meal and that of poor quality to supplement the grass and at first she lost flesh , however, from the time the first stubble was cleared neither she nor her litter have ever looked back *At first* it was, " Ah, Sir, tha'll need to be giving her plenty o' good middlings or she'll never do all they young pigs " But later it became, " Well ! I never did see a better reared litter , no, nor neither a cheaper 'un She b'aint *had* no more than half a bag o' corn not all along " So now I'm building a stye where the sow can go with a run over 3 acres of woodland, *and I'm* expecting her to complete the second part of the Jugoslav picture When the stubbles are quite cleared the litter will have to go as store pigs to be fattened by a swill feeder I'll warrant they'll be good doers They have played a *real* part in agricultural economy and their example, Mr Hudson, should be widely followed throughout the country

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One of many things I look forward to at the end of the war is a sharp decline in enthusiasm for first-aid How many courses of lectures on this controversial subject I shall have delivered by that time I *shudder* to think. Meanwhile the correction of examination papers occasionally affords a gleam of humour. Here, for instance, is Mr Fibula on the treatment of epileptic fits "To prevent the tongue getting bitten place a receptacle in the mouth" Now listen to old Auntie Sternum on the treatment of a burst varicose vein "Place the patient in a laying position " (she keeps poultry, of course) Mr Clavicle has a complicated mind "The blood in a varicose vein," he assures us "moves in both directions", very confusing of it Miss Ulna may fairly be described as a pessimist "An epileptic fit which may occur in youth and continue into old age" is her opening gambit, no relief, you see Mr Femur, on the other hand, believes in the abstract Lay patient down away from all things '—but he unfortunately omits to state how this is to be done The idiotic question on the functions of the liver produced some gallant efforts Thus according to Miss Pelvis, the liver is an involuntary muscle and the Scapula sisters, collusive as ever, gave us the following gem "The liver is a small organ situated just below the stomach opposite to the spleen its function is to distribute the food juices and retain the bile"—a sort of food office, as you might say

* * *

Much as I enjoy reading your peripatetic correspondents, some comment is called for when they show a complete ignorance of the recent literature Your correspondent who wrote on the subject of Little Men may only have been a student—but he should surely have heard of Rosenschmalz's now classic monograph (*Homunculus und der homunculose Unterblutschenhauptwissenschaft* Zurich 1936) The date itself is enough to discount any claim to priority on the part of the American he mentions In the second edition moreover, is mentioned the important work of A K Routh my beloved teacher who first realised the dependence of the homunculi on drugs, without which the pathology of Addison's anæmia is incomprehensible Routh showed that the marrow homunculi ("Little Men" is surely rather a crude term ?) are compelled to eat the nuclei extruded from normoblasts and that in the absence of the dulling effects of Castle's hæmatinic principle (the "sauce of blood-formation ') they are unable to bring themselves to do any such thing, with the natural result of the familiar blood-picture Later I myself put in my tiny oar (unpublished) and have been able to show that the effect of the sulphonamides is to inebriate and later over-inebriate the *Bluthomunculosen* into gnawing first pathogenic bacteria and then polymorphs Again, surely Rosenschmalz and his school have put urinary homuncular psychopathology beyond all question and the excusable error of Rosenschmalz himself in believing in his enthusiasm that he saw a homunculus peering through the opposite end of a cystoscope should not be allowed to obscure his real contribution the discovery that hæmaturia is due to the homunculi playing pooh-sticks with red blood-cells down the gently trickling waters of the tubules I could extend this discussion still farther did I not know how severe are the calls on your space—but perhaps your correspondent ought to look things up for himself ?

* * *

I was talking round the fire the other day and telling the medical staff how I had just made a post-mortem examination of a man with complete transposition of all his viscera, and what an odd sensation it was opening a heart perfect in every respect but built the wrong way round The drawling voice of the hospital wag, deeply ensconced in an armchair, chimed in with "Did you by any chance ascertain whether his blood-sugar was lævulose ?"

* * *

A book that has altered my line of thought for a time at any rate is *Design and Purpose* by Professor Wood Jones This energic concentration masquerading as molecules, corpuscle cities, liver and kidney states imperial brain, this professor of anatomy one of the brightest of a species uneasily dominant for a speck of time (whatever that is !) on a sun's castaway a third-class sun a cooling castaway—this man has dared to peer beyond the scope of groping human sight, vastly above, vastly below, and on the horizontal plane has cast historic eyes a few light-seconds back, has gathered in these messengers of his and believes he reads design And then like some far traveller, home returned with Doric paints he tries to show again these scenes to Doric minds, tongue-bound by man-made sounds, to paint the pattern and unfold design But I have a sneaking suspicion that the word "purpose" may be a misconception of struggling humanity and is part of the design

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M P

The more encouraging prospect opened up by the Allied attack on North Africa, this turning of the flank of the Axis armies in Europe, has had a stimulating effect on Parliament There is likely to be more criticism, and not less, and the lively debate on equal pay for war injuries of men and women foreshadows other debates in the future Mrs Tate moved and Dr Summerskill seconded the amendment on which the vote took place and both speeches were good, but that of Mrs Tate outstanding in its clear and simple appeal for justice and in its direct and vigorous argument The amendment was opposed by the Government, but they could only muster 229 against it, and despite the Government's attitude 95 members—the largest number since the Government was formed—voted against them and for the amendment

Reference was made during this debate to a demonstration of the use of artificial limbs, which was attended by a much larger body of MPs than is often seen in the House itself Mr R L Kelham chief limb surgeon of the Ministry of Pensions, presided over the demonstration Mr Ernest Bevin was in the chair, and the Minister of Pensions at the end of the proceedings moved a vote of thanks to those who had shown how excellent their limbs were and said. "Money is not enough" It is not yet known however whether this sentiment is to be regarded as a statement of Government policy Mr Kelham told us that there were 45 000 cases at Roehampton and sixteen subsidiary centres A schoolgirl of twelve with a below-knee amputation skipped down the room, and Captain Maxwell of the MOP staff dazzled us all by the uncanny dexterity with which he used a multiplicity of separate gadgets fixed to his artificial left arm—to plane hammer screw, chip metal and perform many other skilled operations. An RAF man with an above-knee right and below-knee left amputation was serving as a fighter-pilot—Flying-Officer Bader was his inspiration A many-fingered claw which could be used by a handless pilot to control a plane gave a Wellsian touch to the scene, for it might have been the end of the tentacle of one of the Martians

Service pay and allowances have come up again, the Government announcing some increases which do not, however meet the demand recently put forward by a deputation of members to the Minister of Pensions One of the anomalies of the position of the wife and children of serving personnel enlisted during this war is the provision of medical attendance Doctors' bills up to a small amount may be met by the Ministry but apart from that, and in the absence of money to pay a Serviceman s wife or child is referred to the poor-law authority for treatment In view of the existence of the elaborate EMS hospital organisation this seems both cumbrous and ineffective

The announcement by the Minister of Health of the setting up of a medical committee to advise him on "medical aspects of problems relating to the health of the people" is an important step The list of members is a good one, broadly representative of the medical profession but it omits any special representation of the fighting Services, and it would be improved by securing such representation on its civilian as well as its Service side. Many of the medical problems of the immediate post-war period will be world-wide problems in which Service experience will be of the greatest value

Child Adoption

Mr G Mander asked the Home Secretary whether he was now able to state his decision with reference to bringing into operation the Adoption of Children Act, 1939 —Mr H Morrison replied The Parliamentary Under Secretary of State has received this week deputations on this matter from the principal child-welfare organisations and also from the Woman power Committee I propose to consider their representations before arriving at a decision

In England Now

A Running Commentary by Peripatetic Correspondents

PSYCHOGENIC asthma is a very odd thing. I know mine was psychogenic because I could always beat it by a crude bit of psycho applied before the attack. During the attack the only thing to do was to read a book in a position of orthopnoea and await the conclusion. After two hours of this I usually fell asleep, with the light still on. Getting up to turn off the light I found to be fatal—asthma is twice as bad in the darkness. It is also vital not to cough unless it is absolutely inevitable; one gets into a vicious circle of impotent coughing. But what I still don't know is why I ever got the attacks; or, if you like, why I sometimes didn't. I never had them at school; at Oxford I rowed boats with the success of the over-compensated. I never had them sleeping in the open, even when it rained all night and we didn't have a tent. But at some ten different houses in the holidays I had asthma like fun. It used to start with prodromal symptoms between tea and supper; your lungs didn't quite expand properly and my mother used to notice my shoulders hunching as the accessory muscles started in, but it wasn't what you'd call dyspnoea. The real dyspnoea started about two in the morning and made one feel not only breathless, which was endurable, but remarkably stupid, which wasn't. (Our chaplain at Oxford, a confirmed asthmatic, could never remember anything; he once asked a man if it was he or his brother who was killed in the war.) And then I discovered the pyscho. The first essential was to be busy all day, and leave a few things unfinished. Then you would say to yourself, "How very nice to wake up with asthma in the night; then I could write to Auntie Vi." Nowadays I can say something like this, and with justification, every single night (finals on December 8). And asthma? Never heard of it. There is obviously some quite simple even crude, psycho-analytical explanation, but I wish I knew what it was. It works so very much better than ephedrine.

* * *

On a cold grey afternoon early in November I had to look for the public lavatories at the end of the street, for the mortuary lay behind them. A man on our panel had died without consulting us and the coroner wanted to know why. A tall, gaunt policeman half-opened the door for me and I stepped from the cold wind to a colder silence and the glare of electric light. Under a stained waterproof sheet I found that which I sought, but I did not know him. In the next compartment was the body of a young suicide; the entry wound was just above the right ear and the back of the head was cratered, but the front hair, forehead and face were like some proud Apollo's. A fleeting suspicion crossed my mind that those who spurn their living days see immortality. The policeman had a bad cold; he told me he had been up for the last two nights, his overtones echoing from the bare walls, and, as he blew his nose, the smell of eucalyptus gaining on that of disinfectant and the fleshy smell of cadaver. We grew silent; my thoughts, usually so objective, turned inwards, and I felt as I used when I read the stories of Dostoyevsky. Suddenly came the slamming of a car door, the jingle of keys, and the brisk step of the pathologist. Here was a man who carried an overpowering atmosphere with him—of the home, the club, and probably the golf and rugger world. He chatted as he changed, but the long incision with its single by-pass, although it was made with verve, was in silence. The costal cartilages cracked almost merrily and except for the *staccato* verdict the examination proceeded with mute zest. It was not till the last brisk stitch was tied in perfect symmetry that I realised what had been running through his mind—"By Jove, if we corner Rommel"

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Vaccine Lymph

Mr S P Viant asked the Minister what alterations had been made in the regulations governing the production of calf lymph, and whether more living bacteria were allowed in the lymph than formerly —Mr E Brown replied I have recently made an order modifying the tests for the purity of vaccine lymph. The new order allows an increase in the total number of living bacteria and other visible micro organisms, but it provides safeguards against harmful micro-organisms which are at least equal to those previously prescribed

Miners Medical Service

Mr W Gallacher asked the Minister of Fuel and Power when the scheme for a miners' medical service was to be published and how long it would be before the scheme was put into operation.—Major Lloyd George replied The scheme has already been described in broad outline by the Joint Parliamentary Secretary in the coal debate of Oct 1 (*Lancet*, Oct 10, p 437) I cannot give a precise date on which the scheme will be put into operation, as its introduction must be gradual I am however hoping to be able to fill a number of the necessary medical posts in the near future

Scheduled Diseases in S Wales Coalfield

Major Lloyd George, Minister of Fuel and Power, informed Mr J Griffiths that the number of persons in the South Wales coalmines certified by examining surgeons in respect of scheduled industrial diseases in the year 1938 was 1827

Supply of Technical Books

Mr W A. Colegate asked the President of the Board of Trade whether he was aware of the unsatisfactory position of the supply of technical books, and whether he was prepared to arrange the supply of paper to publishers in such a way that all standard technical books might be available in sufficient quantities for students at technical schools and colleges —Mr E. H. Dalton replied There has necessarily been some reduction in the publication of technical books, but there appears at present to be no serious shortage of such books Special arrangements have already been made to assist the publication of books of particular importance to the war effort, including technical books, and I am considering further measures for increasing the supply of these books

Utility Toothbrush

Dr H B Morgan asked the President whether he would consider, in view of the influence of war conditions on the nation's teeth, the advisability of marketing a utility tooth brush of good quality and durability for public purchase and use, especially having regard to the poor specimens now available in the market —Mr Dalton replied I am already giving consideration to this matter

Medical Exemptions from Fire-watching

Sir Adam Maitland asked the Home Secretary how many men and women had claimed exemption from fire-watching on medical grounds, and what steps were being taken to have their claims examined. Mr H. Morrison replied About a quarter of a million applications had been dealt with by the tribunals up to February last when the Ministry of Health made available the services of their regional medical officers A large part of the outstanding cases have been disposed of under these arrangements In order to relieve the tribunals, I propose shortly to amend the orders to provide that such applications shall be settled by the regional commissioner on the advice of a medical referee appointed by the Ministry of Labour and National Service

Medical Practices

Sir Ernest Graham-Little asked the Minister under what powers officials of his department were empowered to dictate to patients as to what doctors they were allowed to consult, or to doctors as to what patients they were allowed to treat; and as instances of this of which he had been informed had occurred, would he take steps to prevent their repetition.—Mr E. Brown replied Officials of my department are not empowered to dictate either to patients or to doctors in the manner suggested. I understand that the question refers to an incident which was mentioned in recent correspondence in the press and is connected with arrangements which have in many areas been made by insurance practitioners for the purpose of protecting the practices of doctors who are on service

SCOTLAND

NORMAN WALKER

Here in Edinburgh we understand the loss sustained to dermatology through the passing of Sir Norman Walker As a teacher he was pre-eminent His clinical lectures were practical and always interesting He taught dermatology as a part of general medicine, and although practising as a specialist he never lost sight of the fact that the student was being educated as a general practitioner He was more interested in the common skin diseases than in the dermatological rarities He did a great deal of pioneer work in the early days of X rays He was the first to treat ringworm of the scalp with X rays, but as he did not give doses sufficient to bring out the hair, no benefit resulted Some years later when Sabouraud published his method of treatment by X-ray epilation, Walker at once started to use it systematically, so that the first steps were then taken which gradually reduced cases of scalp ringworm in Edinburgh to an insignificant number He was also particularly interested in lupus vulgaris, and by the use of tuberculin both locally and generally, by X rays and Finsen light and latterly by general ultraviolet ray therapy, he obtained excellent results in a disease the cure of which had been looked upon as practically hopeless He started a special clinic where these patients attended regularly for treatment Many cases had lasted for years and lost all hope of cure Owing to their facial disfigurement they were often social outcasts, and when they found someone who took an interest in them they came for treatment from all over Scotland Even when he retired after fourteen years as assistant physician under the late Dr Allan Jamieson and eighteen years in charge of the skin wards of the Royal Infirmary, Edinburgh Walker continued to take a special interest in these cases and acted as extra-physician for the treatment of lupus by ray therapy Walker's contributions to medical literature were many and varied He translated from the German Hansen and Looft's book on *Leprosy* and Unna's huge volume on the *Histopathology of the Skin* Both these undertakings especially the latter, entailed a tremendous amount of hard work In 1899 he first published his own *Introduction to Dermatology*, now in its tenth edition, written in the same interesting manner in which he lectured and full of useful, practical instruction

Sir Norman had a logical judicial type of mind and was a clear thinker who could express himself clearly He had a high sense of public duty, as was shown by his many-sided activities outside his practice No-one was better able to give sound advice to those in difficulties with medical ethics, and in trouble one could always count on his sympathetic interest Soon after the end of the last war he was found to be suffering from diabetes In spite of treatment he slowly became worse, till it looked as if his days were numbered Though very ill he continued to carry on all his duties and refused to give in Then, thanks to the newly discovered insulin his life was saved, and although he was never again capable of physical exertion his mental powers remained as alert as ever. He possessed, what is not common among medical men a combination of medical acumen and skill with organising and business ability In whatever sphere of life he had been placed he would have made his mark. As it is, medicine in Britain and in Edinburgh in particular, is the poorer by his passing

R C L

MINOR VACCINATION DIFFICULTIES

Stirlingshire practitioners do not like their county council charging them for the calf lymph they used in the recent vaccination campaign, and at Falkirk any plan of mass vaccination is in abeyance until the town council has further considered the MOH's plan of campaign to meet an emergency if it should arise Such difficulties need prompt adjustment to avoid holding up a measure of national importance Doctors vaccinate their panel patients free of charge with lymph supplied by the insurance committee or in an epidemic, by the Government through the local authorities When a MOH orders free vaccination in his area he opens clinics where the work is done by members of his own staff often with the help of local practitioners paid on a sessional basis At their own surgeries practitioners continue to vaccinate their panel patients free of charge while charging private

QUESTION TIME

Medical Advisory Committee to Minister of Health

Sir Francis Fremantle asked the Minister of Health what steps he was taking to keep in touch with representative medical opinion in regard to the planning of the future of health services —Miss F Horsbrugh replied The Minister has for some time felt the need for associating with the work of the Ministry a representative body of medical men and women engaged mainly in the clinical practice of their profession He has therefore set up a medical advisory committee whose terms of reference are to advise him on the medical aspects of problems relating to the health of the people

The following is the list of members

President of the Royal College of Physicians of London
President of the Royal College of Surgeons of England
President of the Royal College of Obstetricians and Gynæcologists
Chairman of Council of the British Medical Association
Dr G C Anderson
Dr J C Arthur
Miss Alice Bloomfield
Dr J A Brown
Mr E Rock Carling
Dr J A Charles
Prof Henry Cohen
Dr W Allen Daley
Lord Dawson of Penn
Dr E A Gregg
Lord Horder
Sir Wilson Jameson
Dr W S Macdonald
Dr Alan Moncrieff
Prof R M F Picken
Prof Harry Platt
Dr A T Rogers
Dr, Daniel Twining
Dr Oscar Williams
Dr Albertine Winner (lieut colonel)

Industrial Health Research Board

Mr M P Price asked the Lord President of the Council what progress had now been made in the work of the Industrial Health Research Board since its reorganisation and expansion , whether fresh problems were being tackled and adequate personnel made available for the purpose , whether there was satisfactory cooperation with other Government departments , and whether steps were now being taken to carry knowledge of the board's work in simple terms to both employers and employees —Sir J Anderson replied The board, since its recent reorganisation by the Medical Research Council, has initiated investigations into a number of new problems, in addition to continuing work on earlier lines Work on further subjects is being planned Additions to the investigating staff are being made as required, although there are naturally difficulties in the way of securing suitable personnel under present conditions The work of the board is conducted in close touch with the Factory Department of the Ministry of Labour and National Service, and facilities for investigation have been given in establishments under the control of the Ministry of Supply The policy of the council is to publish the results of research work, both old and new, in brief emergency reports written in simple terms

Medical Schools and Women Students

Mr G Mander asked the Minister of Health the position with regard to the committee on medical schools which was considering the desirability of increasing the facilities for women to study in medical schools in London , and when a report was expected —Miss F Horsbrugh replied The committee was appointed by the Secretary of State for Scotland and the Minister of Health to inquire into the organisation of medical schools I cannot give a date for the report , the issues involved are of first rate importance and will demand some time for examination The particular question mentioned is of course one only of the very large number of questions that will be considered by the committee

Control of Malaria and Yellow Fever in West Africa

Dr Morgan asked the Under Secretary of State for the Colonies whether any statistics were available of the incidence of malaria in Sierra Leone and other parts of West Africa during the last three years , and whether there was any coordination of malaria control as an item of war strategy in West Africa or whether the different services were left in control in their several spheres and special areas —Mr Harold Macmillan replied Complete statistics for malaria generally in Sierra Leone and elsewhere in West Africa for the last three years are not available, but special attention has been given to the question since the outbreak of war, and a mission was sent out to investigate and advise on the measures to be taken against the incidence of malaria in Freetown The measures recommended are being implemented as far as possible with funds provided under the Colonial Development and Welfare Act, and including permanent measures of control Similar attention has been given to the problem in other West African Dependencies There is the closest coordination between the civil administration and the Services, including the USA authorities, in dealing with this problem, and in addition officer of the Colonial Medical Service visits all seaports British West Africa to advise on the coördination of measures which are being taken

Dr Morgan Are swamps in the vicinity of chosen drome sites in West Africa being effectively drained or o as part of an effective malaria control direction , and is officer of the Royal Air Force, a civilian malariologist or officer of the Royal Army Medical Corps responsible f preventive health action at or in the vicinity of these sites — Mr Macmillan replied Very active control measures a malaria and yellow fever are being taken at all airfield sites in British West Africa The executive authority for preventive health action is usually an officer of the RAF, who in general control airfield sites in British West Africa The RAF have their own specialist officer to deal with the problem and an experienced entomologist seconded from the Colonial Medical Service has recently been visiting all airfields in British Africa.

Dr Morgan Have any reports been received from the Resident Minister of State on malaria , has the advantage of screening as an effective safeguard been considered and to what extent has it been adopted , and has consideration been given to the desirability of appointing one experienced malariologist in effective control and directly responsible to the Resident Minister for a concerted plan to safeguard the health of all troops as well as civilians in this area —Mr Macmillan replied Every aspect of this important problem is receiving the most careful consideration by the civil and Service authorities concerned in conjunction with the United States military authorities in West Africa Lord Swinton considers that satisfactory machinery has been devised for coordinating measures to deal with this problem

Compensation for Industrial Disease in Nigeria

Dr Morgan asked Mr Macmillan whether, in the workmen's compensation legislation in the Colony and Protectorate of Nigeria, any provision was made for compensation for industrial diseases on the lines of the statutes and regulations in Great Britain —Mr Macmillan replied Such provision was not made in the Colonial Office model ordinance upon which the Nigeria Workmen's Compensation Ordinance, 1941, was based The reasons for this were the considerable difficulties which were likely to be experienced in many Colonial territories in diagnosing such diseases and the even greater difficulties in determining whether, in any particular case, the disease was in fact directly and specifically attributable to the workman's employment An additional complication arises from the unfortunate prevalence of diseases such as malaria and hookworm, which lower the resistance of the worker to other diseases It has been found by experience in this country that even when a case has been dealt with by a medical practitioner familiar with the particular employment and practising in a district where the particular occupational disease is most usually found, it is frequently necessary for it to be referred to a specially qualified medical referee appointed to deal with such cases As there were likely to be very few medical practitioners in the Colonial Dependencies with the necessary specialised knowledge and experience, it was felt that there might be a considerable risk of inequitable awards being made if provision for compensation for occupational diseases were included in the model ordinance and adopted by the African governments for whose assistance the model had been prepared

Sewage Disposal at Sierra Leone

Dr Morgan asked the Secretary of State for the Colonies what is the present method of sewage disposal in Sierra Leone and especially Freetown , whether the sewage canals in the town are still open, and the nightly emptying of buckets therein still obtains , whether the sewage disposal in troop areas as contrasted with civilian regions has been improved by the building of an Otway pit , and whether such methods are being more extensively used in West Africa ?—Colonel O Stanley The existing methods of sewage disposal in Sierra Leone are by bucket in urban areas and by pit latrines in rural districts There are a few septic tank latrines in urban areas, but these are exceptional The method of disposal of sewage from the buckets is by emptying into the sea or into covered earth pits It is understood that the Otway pits installed by the military authorities have proved satisfactory Improved and more modern methods of sewage disposal are being considered in the British West African territories the oligarchy of the many " when he meant " the tyranny of the crowd " and this unfortunate expression was punctually and pleasantly pilloried in *Punch* A good deal might be said in extenuation of this mistake made by a man whose formal education stopped probably at ten or eleven There is no point in borrowing " calligraphy " from the Greek meaning good or beautiful writing if we use it merely as a synonym for handwriting and then qualify it with illegible Such a slipshod expression blurs the fine distinctions of which our language is capable

Wakefield REGINALD LAWRENCE

*** The use of the word calligraphy for penmanship generally is not so modern as all that The OED gives the date 1645 —ED L

Obituary

DONALD STEWART MIDDLETON

M B EDIN F R C S E , BRIGADIER A M S

Brigadier D S Middleton who has died while on active service in England left his work as assistant surgeon to the Edinburgh Royal Infirmary at the outbreak of the war for the post of ADMS Anti-Aircraft Defences of Scotland Middleton was born in South Africa in 1899 and educated at Edinburgh Academy and University He qualified in 1921 became a fellow of the Royal College of Surgeons of Edinburgh in 1925 and of the Royal College of Surgeons of England a year later After various house-appointments, including one at the Paddington Green Children's Hospital, he became clinical tutor at the Edinburgh Royal Infirmary and assistant surgeon to the Royal Hospital for Sick Children Appointments as assistant surgeon to the Infirmary, surgeon to the Deaconess Hospital and lecturer in surgery in the School of Medicine of the Royal Colleges followed He was the author of sections in Miles and Wilkie's *Manual of Surgery* and in their *Operative Surgery*, and he also published articles dealing with congenital abnormalities

Lafayette

One of his friends writes I never knew why Donald Stewart Middleton was always called Sam through the length and breadth of Scotland I never asked why One just took it for granted that it was a term of endearment I knew him for many years before the war, as surgeon, consultant and friend, and saw a lot of him at the meetings of surgical, medical or medico-political societies and clubs, for his tastes were catholic and anything but circumscribed Watching him measuring his strength against skilful antagonists listening to him asking awkward questions with that unerring judgment which led him to grasp the essential core of the matter, hearing him summing up the result of a debate, I thought that here was no ordinary surgeon and here was no ordinary man For some time Middleton's keen diagnostic sense had made him war-conscious He joined the Territorial Army and rose rapidly, so that the outbreak of war found him in the rank of full colonel as ADMS Anti-Aircraft Defences of Scotland It was a new branch of the medical services and guided by Brigadier (now Major-General) P H Mitchiner, he threw himself wholeheartedly into the task of building it up and organising it surely and steadily for the wrath to come And so it was that in September, 1939, I met a changed Sam He was no longer just a great surgeon in the making, he was forthwith a great man and an inspired and inspiring leader of men He always had had a magnificent physique, but in uniform he looked even more imposing and radiated confidence and personality

But he never forgot that he was primarily a doctor, and he believed firmly that from the ruin and ashes of war there would emerge phœnix-like, a less selfish self-seeking and more coöperative and integrated medical service The medical profession has lost an honest and single-minded administrator whose wise counsel will be sorely missed when post-war medical problems will require our best

RONALD EDWIN SHAW LEWIS

M C, M B EDIN , CAPTAIN R A M C

Captain R E S Lewis was killed in action in the Middle East during October at the age of 28 He was the son of Dr A J Lewis of Birkdale and was educated at Mill Hill and Edinburgh University where he graduated in 1939 After acting as house-surgeon at the Royal Victoria Hospital, Dover, he declined a resident appointment at the Edinburgh Royal Infirmary and entered the RAMC in February, 1940 In September, 1941, he went to Egypt with a light field ambulance and in July, 1942, became regimental medical officer to the Queen's Bays He was awarded the military cross for gallant service

Finch Clacton

HOWARD ENSOR

C B, C M G, C B E D S O M B DUBL

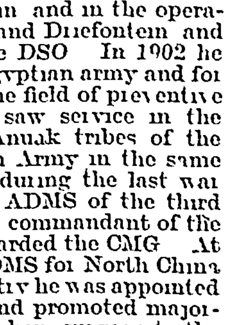
MAJOR-GENERAL, LATE RAMC, RTD

Major-General Ensor, a colonel commandant of the RAMC since 1937, who died on Nov 22 was a courageous officer full of grit and common sense Born at Cheltenham in 1874 he was educated at Trinity College, Dublin where he graduated BA in 1895 and MB two years later Before taking up his commission in the RAMC in 1899 he went as medical officer with the Lapai expedition His service in West Africa was interrupted by the South African war, he was in the advance on Kimberley, including the action at Magersfontein and in the operations at Paardeberg Poplar Grove and Driefontein and for his bravery he was awarded the DSO In 1902 he was seconded for service with the Egyptian army and for the next ten years his work lay in the field of preventive medicine But in 1912 he again saw service in the operations against the Beir and Anuak tribes of the Sudan He returned to the British Army in the same year with the rank of major, and during the last war served in France, for two years as ADMS of the third division In 1918 he was appointed commandant of the RAMC school of instruction, and awarded the CMG At the beginning of 1927 he became DDMS for North China and soon after his return to this country he was appointed DDMS for the Eastern Command and promoted major-general From 1930 to 1933 he was hon surgeon to the King He retired in 1933 and spent some time in Calcutta as superintending surgeon to the British India Steam Packet Company, finally returning to this country to settle at Hawkhurst in Kent General Ensor married in 1912 Miss Gladys Tweedie and they had two sons and one daughter

JOHN RICHARD GLANFIELD HARRIS

M B CAMB, D A

Dr J R G Harris who was killed in August by enemy action while on holiday was a man of many talents with many friends One of them, J D C , who was with Harris at Cambridge and later shared rooms with him in London, recalls his love of music and excellent tenor voice and the zest with which he organised and trained the Christmas troupes at the London Hospital " Harris was keenly interested in games," J D C continues, " and though his physique did not allow him to excel he was a first-class hockey umpire and a very good rugger referee His ability to see the pros and cons of any problem was exceptional and his judgment sound " Harris qualified in 1935 and graduated the following year After holding various house jobs he was appointed resident anæsthetist at the London and quickly became so absorbed in the subject that he decided to specialise in this work Eventually he was elected to the staff of the London as honorary anæsthetist, and he was also on the staff of University College Hospital and the Hounslow Hospital



Elliott & Fry

patients an appropriate fee Stirlingshire apparently takes the view that when a fee is charged the lymph should be paid for by the doctor In the Falkirk plan the local doctors were to be asked not only to help at clinics on a sessional basis but also to vaccinate patients at their own surgeries for a flat rate of 2*s* 6*d* a patient Falkirk practitioners would then be taking a bigger part in the vaccination campaign than those in the rest of Stirlingshire Obviously in an emergency the main thing is to get the job done, which means pooling all the available man-power Whether in time of peril from smallpox the price of lymph should be charged to doctors is a moot point, but it should not be beyond official wit to work out an agreement which would allow doctors to vaccinate their private patients with lymph supplied by the local authorities, so long as it was understood that the price of the lymph should be taken into consideration in fixing an appropriate fee for the occasion Falkirk and Stirling can give a useful lead in finding a way out of these minor troubles

VENEREAL DISEASE

Dr Andrew Davidson, chief medical officer to the Department of Health, said recently that there had been an increase in the incidence of venereal disease in Scotland since the outbreak of war The number of newly infected patients attending civilian treatment centres was 6433 in 1939, 6851 in 1940, and 10,179 in 1941 Newly acquired cases of syphilis in Glasgow numbered 390 in 1939, 580 in 1940 and 909 in 1941, and in Edinburgh 199 in 1939, 230 in 1940, and 444 in 1941 Since every patient who had acquired infection did not report at a treatment centre the figures giving the true position were certainly higher Dr Davidson felt there was need of greater control not only for the sake of the general public and the fighting forces but also for the safety of many Allied troops now in the country, some of whom came from countries where greater protection is ensured

Letters to the Editor

INGUINAL HERNIA

SIR,—With the first two paragraphs of Mr Dodd's letter of Nov 7, in which he says that it is unnecessary to fix the neck of the sac to the abdominal wall and that it is necessary to recognise, define and suture transversalis fascia, I am in complete agreement, but I wish he had stopped here (except for the concluding paragraph), and not given his implied approval to the Bassini operation A study of recurrent hernias made possible by the enrolment into the Services of most of the young manhood of Britain has furnished enough evidence to permit of the following dogma

Any interference with the normal musculature of the inguinal canal in the operative repair of indirect inguinal hernia in the young subject increases the risk of recurrence

The treatment of this common deformity has acquired great importance at the present time Operations for hernia on Service cases are being performed in large numbers, and not always by surgeons of wide experience or under ideal conditions for surgery This is no time for "experimental" surgery—for the devising and trying out of new operations The subject is too urgent for that What we must do is to agree on the most reliable operation which is at the same time the simplest and safest I submit that the operation which best satisfies these requirements for indirect inguinal hernia in otherwise healthy service patients is complete excision of the sac and repair of the transversalis fascia at the site of amputation of the sac, without disturbing the cord from its bed

As regards large and long-standing scrotal hernias, direct hernias and recurrent hernias, the position is not so clear cut Correct selection of cases is of the greatest importance, for from the military standpoint it is of little use operating unless there is a reasonable hope that as a result the patient will be able to carry out his military duties more efficiently All will agree that some form of plastic repair is usually necessary, the more debatable point being the medium used for the purpose Fascia probably has most to commend it—either a local flap, or, if the defect be large, fascia from the thigh A considerable experience of the use of floss silk, and observations of the late results in cases operated on by others has led me to conclude that it is not suitable for general t because if sepsis does occur its effects are likely to ca long invalidism

The problem does not end with the operation I necessary to ensure that the patient is returned to unit in the minimum time compatible with maxim fitness To secure this, graduated exercises are inv: able and are an aid to both physical and mental discipl The regime advised is 3 weeks in bed, 3–4 weeks i suitable BRCS auxiliary hospital, and 4 weeks in convalescent depot Graduated exercises are begun bed on the 12th day, and continued throughout recovery period The patient, on the average, retu to duty 12 weeks from the date of operation, and is t fit to withstand the full rigors of Army training

HAROLD EDWARDS

THE AMPUTEE'S POINT OF VIEW

SIR,—LRCP has had bad luck with limb fitt and limbs because he has a stump which nowaday condemned owing to its bad record The through-k amputation was performed in the last war first, in ca of sepsis where the surgeon feared to amputate thro the muscle mass of the thigh for fear of cutting thro infected tissue planes or infecting them, and secon with the idea of providing an end-bearing stump wl was then in vogue Today we recognise that the throu knee and transcondylar amputations gave very p end-results on account of the following factors

Anatomical —The articular cartilage covering the end of femur did not stand up to direct weight-bearing The blo supply to the covering skin is poor, being solely derived f the small superior geniculate anastomosis, so that it could stand up to weight bearing, especially when stretched (the bulbous condyles

Limb —The thigh corset or socket has to have an opening down the front to permit the bulbous end of the stump b passed down Even when this corset is tightly laced it is snugly fitting, so that the end does not bear weight evenly the bulbous condylar stump, and sweating and friction ca skin eczema and ulcers The axis of the artificial l knee joint cannot be placed at the normal level, thus sitting the appearance through the trouser is noticea The lateral stays and the hinges have to be bent round bulbous end of the socket, causing mechanical weakness undue breadth of the artificial joint

The wearing properties and gait of this amputat are thus poor and LRCP would be much better off w an above-knee stump fitted with an up-to-date stur controlled limb He has only to see a below-k amputee fitted with a standard modern limb to appreci that even an experienced limb fitter often has so difficulty in telling which leg has been lost when he s the amputee walk or play games

Harley Street, W 1 G O TIPPETT

DIAGNOSIS AND TREATMENT OF SCIATIC PA

SIR,—Captain Good describes a method of treatm which is in common use If he had been able to foll up his patients I fear he would have been less satisf with his diagnostic skill and the results of his treatme In my hospital work I see a large number of civilian a Service patients who present the clinical picture that depicts For many years I have injected procaine a other solutions into the tender areas that he enumera and in many cases the relief of pain is immediate T is gratifying but in the majority of cases the sympto soon return It is my experience that the injection m be followed by the local application of physical measu such as heat and massage to the muscles that are spasm An attempt must be made to correct the und lying cause, which commonly is poor posture If thi not done, a draught or some seemingly trivial injury v provoke another and usually more severe attack

FRANCIS BACH

London, W 1

CALLIGRAPHY

SIR,—I must enter an immediate protest against t expression "illegible calligraphy" in your issue of N 21 (p 625) It gave me great pain I once picked u book on English written by two teachers at one of o famous high schools for girls and opening it at rand saw a phrase "if the calligraphy is bad" So much f our teachers! A Labour leader once said in a spee to have a world-wide and not a local appeal This should comprise a research institute in association with the first hospital in the country The hospital should be large, with departments embracing all aspects of medicine and should take the place of one or more of the redundant undergraduate teaching hospitals of London It should form the apex of a regionalised postwar hospital scheme for the country, acting particularly as regards London Here it should act as the head hospital in relation to the teaching hospitals as these individually act to their sector hospitals Its scope, however should be not only local, but national, imperial and international It should have the closest association with the other special hospitals so that each branch of medicine becomes coordinated, and its relation to the vast reservoir of LCC patients should be carefully considered It should be staffed primarily by whole-time professors who must have a prestige and pensionable remuneration eminently attractive to the best men and women in medicine, and be elected from the best medical material in the Empire by the universities Both for the staff and for research workers there should be the widest facilities for interchange with medical personnel throughout the British Commonwealth and with all interested foreign countries

* * *

Such a scheme calls for a new building of key importance to the state situated centrally in London, housing these bodies controlling the interests, professional, research and educative, of the profession The various existing bodies (such as the colleges), most of which have to be rehoused in any case, could retain separate premises within this, but at least they would have the physical opportunity of close cooperation in all their activities, the amenities of a certain degree of community life (as the legal profession has), and in combination could put up a brave and unrivalled showing to the world Whether or not the postgraduate school, the research institute and the hospital should be on the same site, thus forming a compact medical city, is a matter for discussion

This scheme admittedly cuts across many long-established interests and will be unrealisable unless whole-hearted effort is made, but by some such plan British medicine can be made a new and living organism of incalculable value to the people and so to the state, while by fostering international relationships and aiding humanity at large it could play no small part in moulding a more rational and stable world society

Appointments

COCKREM, GWENDOLINE E MRCS resident obstetric officer at St James Hospital, Leeds

WILSON, A J MD EDIN FRCPE medical referee for workmen's compensation for the county court districts of Daventry and Rugby

Births, Marriages and Deaths

BIRTHS

ANDERSON —On Nov 24, at Exeter the wife of Surgeon Lieut-Commander E W Anderson, RNVR—a daughter

BILLINGTON —On Nov 5 at Kampala, Uganda the wife of Dr W Roy Billington—a son

JONES —On Nov 26 at Adlington Hall, Cheshire, the wife of Mr A Norman Jones, FRCS—a son

OSWALD —On Nov 21, the wife of Lieut Colonel Neville Oswald, RAMC—a son

PINKERTON —On Nov 24 at Hitchin Herts the wife of Lieutenant G E Pinkerton RAMC—a son

SUTTON —On Nov 3, at Ripley Surrey the wife of Dr Phillip Sutton, PAFVR of Great Yarmouth and Sidcup—a daughter

VIRET —On Nov 27 at Woking, the wife of Surgeon Lieut-Commander W E Viret RN—a son

MARRIAGES

MCARTHUR—STUART —On Nov 26 at Bearsden Andrew McShee McArthur MB major RAMC to Christina Cecilia Marie Nicolson Stuart

WARREN—BARNES —On Nov 28 Harold Brian Seymour Warren, lieutenant RAMC, to Josephine Barnes FRCS

DEATHS

BIRT —On Nov 19 at Halifax, Nova Scotia, Arthur Birt MD FDIN, FRCP CANADA

CARTER —On Nov 25 at Putney Frederick Heales Carter, MD DURH FRCS aged 89

COOMBF —On Nov 23 at Sheffield, Charles Frederick-Coombe, MRCS aged 83

YEO —On Nov 21, at Blackheath, Sheila Yeo MRCS, aged 47

LANCET CROSSWORD SOLUTION

(See Nov 14 issue, page 590)

Z	U	P	T	T	F	T	I	L	L	S	S	I	D	A	W
L	E	U	R	C	E	N	R	O	R	E	H	T	O	M	E
E	Y	B	A	D	V	E	R	T	I	S	O	I	D	D	A
S	L	L	I	P	E	N	E	N	G	S	P	L	E	E	N
Q	U	I	T	E	R	E	G	O	S	U	P	I	R	K	S
U	R	C	H	T	O	M	U	I	N	R	I	C	E	L	C
I	M	A	G	E	N	I	L	T	N	T	R	E	L	G	O
N	A	T	U	R	E	P	A	C	O	N	S	T	E	R	N
C	E	I	V	E	S	O	R	E	T	T	S	E	G	O	T
E	L	O	A	D	I	U	I	J	O	Y	O	N	E	W	R
A	B	N	H	E	N	R	Y	B	O	D	R	O	W	V	O
B	A	S	I	N	G	S	T	O	K	E	C	T	T	I	L

SIR,—When mothers of growing girls meet out shopping and discuss where the very best crossword puzzles are to be got, one is sure to overhear it said—"We always go to Mr Peter Quince for ours, you can always rely on his to be quite free from all objectionable advertising matter" Imagine the consternation in these circles, gentler than the ones you frequent, my good Sir, were I to employ my muse in "pushing" Tom and Dick's trusses, Henry's irregularity pills, or even a "Lancet" publication What abnegation of high principles enrooted in my nature How redolent of commerce! How my enemies would have triumphed (!)

Actually Margaret, my muse, was so wroth at the slightest hint that the pair of us might accept the derogation that she walked out on me without as much as "goodbye," but muttering (as she always does when distrait), "Oh, don't deceive yourself!" She was a good tough muse—she came from the museum at TCD—although "suffering much from spleen and vapours" and other similar ills Unfortunately I had had to Basingstoke her rather cruelly that very morning because she would ogle a lot of rude ABs who shouted crude remarks on the disparity in our ages So now, thanks to you, Sir, I am in the unenviable position of having no muse It irks me not a little, to employ a litotes

As you yourself lent a deft hand in editing this book, you cannot very well review it in your columns A pity, I should have quite enjoyed writing a page or so of highly delectable prose (and incidentally enriching the tone of your publication) instead of all this nonsense where I have with considerable ingenuity to insert awkward words, videlicet "videlicet," and quotations—e g, "This other Eden, demi-Paradise"—without distorting the theme too much but with enough double-crossing traps to snare and delude the poor boobs who fall for that sort of thing

You bade me devise a crossword about "Control of the Common Fevers" Well, you are not getting one from me My objections to doing it are insuperable The book and its twenty-one authors are too good to be taken in vain and the public will be a mutt if it doesn't snap up the entire edition anyhow

Adieu and likewise addio,

PETER QUINCE

ON THE TABLE

THE Cambridge branch of Children's Nutrition Council has published a penny leaflet showing how to plan a war-time diet. It is a table of food values the foods being classed as energy foods, body-building foods those that give calcium, those that give iron, and those that contain vitamin A, the vitamin-B group vitamin C and vitamin D The lists of foods are not hampered by figures but arranged so that the most valuable foods in each class head the list On the back page are a few useful notes which will help in planning the family diet some reasons why national wheatmeal is better than white bread, and ten lines of advice on cooking so as not to lose vitamin C The leaflet is a bargain at a penny and can be had from the branch secretary, c/o Department of Zoology, Cambridge

A BRITISH ACADEMY OF MEDICINE

SIR STEWART DUKE-ELDER, M D ST AND, F R C S
OPHTHALMOLOGICAL SURGEON TO ST GEORGE'S HOSPITAL

THE purpose of these proposals is to suggest a mechanism whereby medicine in this country might play a worthy part in influencing the social changes which are now upon us and are undoubtedly to grow in momentum in the near future More than one body has formulated plans for the state-aided treatment of the sick, and one ministry has recently felt the need for professional guidance but medicine, interpreted in its widest sense as social biology, should have a wider and higher mission—the creation of an environment wherein the fullest attainment of the health, happiness and efficiency of the people is possible British medicine in its present incoordinated state lacking central stimulation guided by unrelated and often competing professional bodies and administered by a dozen ministries, is in no position to assert itself in an integrated manner to confer the benefits it might upon the population or to implement the opportunities of the immediate future in reconstruction research and international influence After the war the state must play a much larger part in administering medicine than hitherto, and if a living science is not to be deadened by bureaucracy medicine must be able to advise the state with a single authoritative voice, and the state should have a single representative body to which to appeal for guidance and support In the second place, in the international sphere at the end of the war the Anglo-Saxon community will be immensely important in the cultural affairs of the world, and if London is to profit by its unique opportunities, and become a world centre of progress and research, British medicine must bestir itself to take a lead rapidly and effectively before the initiative falls into other hands Finally, it is urgent to formulate integrated plans now to foster the national effort which will not cease with the cessation of hostilities, to minimise the social ills which normally accompany and follow wars, and to guide society in the difficult times ahead

For these reasons it is of primary importance that some professional body of recognised authority and influence should be created, not displacing or destroying, but coordinating and augmenting the influence of the present unrelated and relatively impotent bodies, this body would receive the unquestioned confidence of the Government, the people and the profession, and could stimulate a revival of medical progress and research in this country displacing the Continental centres and attracting students and research workers from all over the world Such a body might be called the British Academy of Medicine It should be a corporation with a statutory basis, of compact size, authoritatively selected and wholly divorced from politics It should be supported by and work intimately with the state, be affiliated to the Privy Council and thus responsible through a minister to Parliament

* * *

To perform its functions the academy might have under it the following councils —

1 *A Council of Civil and Social Medicine*, advising on the practice of all civil medicine in this country Its activities might be divided among three committees

(a) *Social medicine* —This committee would advise the Government on questions of social medicine in the widest sense This conception embraces not only such general questions as public health, nutrition, immunisation, reconstruction, town planning and housing, but should also include the organisation and conduct of a national service of preventive medicine for the individual It should start in the antenatal clinic, continue in close conjunction with a revised educational system, and extend—at the least—to the termination of military or other social service It should include physical training, recreational and holiday organisation, and wise and restrained psychological guidance

(b) *Industrial medicine* —To advise industry both *in this* country and overseas from the biological aspect as to how its efficiency might be increased and its economic and social burdens lessened by the promotion of the health of industrial workers, the improvement of their physical environment at work, the anticipation of industrial diseases, and research in their amelioration and neutralisation

(c) *Medical service and hospitalisation*—that is, the ment of the sick It is too often forgotten that this of medicine, which today occupies most of the activitie the profession and the interest of the people, is of humanitarian and public value than the prevention of sickn Such a committee would advise the Government on provision and maintenance of a national organisation render to every individual in the state all necessary med services, domiciliary and institutional

2 *An Imperial Medical Council*, advising the th fighting forces and the Colonial Office on med problems affecting their services and coordinating th from the professional point of view There should the closest liaison between, if not amalgamation these four services If the administrative interdep mental difficulties could be overcome, wasteful ov lapping would be done away with, and the rela isolation of each would be abolished The indivi deficiencies in professional opportunity in each wo be compensated, so that, with the limitless fields colonial medicine and hygiene in front of it and research facilities and encouragement of the acade behind it, such a consolidated service ought to incr immeasurably its attractiveness to potential recruit ment and thereby its usefulness to the communitie would serve and to the state

3 *An International Medical Council* —For ma years German influence and thought has dominated an almost exclusive degree the professional outlook Western, Northern and Southern Europe, and to a degree—but still effectively—in most other countrie the world, a position which was quickly regained a the last war and exploited for political ends This due not so much to professional excellence or origina as to organisation at home and abroad, and the con of medical literature In the chaos, which will fol the cessation of hostilities in Europe, this dominance Berlin must never be allowed to reassert itself, but alternative must be offered The obvious alternati London, and fortunately we have in this coun today, looking for a leader, notable medical represen tives of many European countries Then and th peoples' response to a British lead would be enthusias The international medical council should therefore m plans now, in conjunction with Allied representati for instituting, under the ægis of the academy, International Centre of Medicine Its immediate p pose should be to formulate a policy for the effect rehabilitation of the broken medical organisation culture of the overrun regions of Europe and Asia, would probably have more humanitarian and polit value than any other postwar measure Its long-te purpose should be to assume responsibility for creation of an international centre of research learning, the maintenance of liaison with foreign unive ties by lectureships and otherwise, the conduct international congresses, the publication of stand medical literature in foreign languages, and the orga tion of research to elucidate medical problems in fore lands

4 *The Medical Research Council*, exercising a stimul ing influence on research It would continue functions of the present body with considerably la *financial resources than are available* to it in peace-ti coordinating therewith other sponsors of research in country and extending it abroad, actively stimulat and assisting the advance of medical knowledge to fullest degree It would, moreover, have the advanta of close association with a hospital peculiarly adap for this purpose

5 *Professional Councils (Royal Colleges, &c)* acting advisory professional bodies and controlling th specialties, each retaining its individuality, but gain the advantage of mutual support and coordinati With these might well be included the Royal Society Medicine for its social facilities as a professional meeti ground and its library

6 *A Council of Medical Education*, advising genera on this subject and, in association with the universi assuming particular responsibility for creating, out the scattered arrangements at present available London, a new organisation for postgraduate teachi with a cc

THE WAR AND SCHOOL-BOYS' FOOD

E M. WIDDOWSON
BSC, PH D LOND

R A McCANCE
MD CAMB, FRCP

(*From the Department of Medicine, Cambridge*)

DURING the years 1936–39 we investigated the food takes of 1000 middle-class children, aged 1–18 years, ing in various parts of the British Isles It was clear om this work that the present rations provide younger it not older children with as much of the rationed ods as they were eating before the war Figs 1 ad 2 illustrate this point They show the average nounts of sugar and jam eaten by boys and girls before e war compared with their present rations The dolescent boy is allowed no more of these foods than s 2-year-old brother, although his calorie requirement is more than twice as great Within the family, no oubt, considerable adjustments take place, by which e older children benefit from the rations allowed the ounger ones, but nothing of this sort can happen at oarding-schools which cater entirely for boys of 13–18, r at this age all demand large quantities of food Something was already known of the eating habits of boys at hese institutions, for the diets at two well-known public chools—let us call them St. Butler's and St Hudson's—ad been studied before the war, and also those of boys t a large secondary school, "St. Woolton's" These chools were in the Midlands or the South of England n the spring of 1942 it was decided to repeat the survey t the three schools, to see how the diets had changed oys of ages similar to those previously studied were hosen, and the investigation was carried out at the ame season of the year Each boy weighed all the ood that he ate for a week Details of the method of nvestigation have already been described (Widdowson 936, Widdowson and McCance 1936) Recipes of ooked dishes were obtained, so that their composition ould be calculated The results of this investigation ave been analysed statistically, and only significant ifferences have been emphasised The number of boys t each school who took part in the investigation was s follows —

	St Butler's	St Hudson's	St. Woolton's
1936–38	14	19	26
1942	10	18	24

Results

RATIONED FOODS

Successful adaptation to any system of rationing and estriction calls for the full use of all the rations It also nvolves increasing the consumption of unrationed foods o make up the deficit in calories caused by the restricted ntakes of rationed foods Lastly, it demands the wise hoice of unrationed foods to make good deficiencies ther than calories

Table I shows the average amounts of rationed foods eaten by boys at the three schools before the war, and the ations at the time the 1942 investigation was carried out It also shows the quantities of rationed foods actually eaten in 1942 The figures for butter and margarine present only the butter and margarine spread on bread, they do not include any fat used in cooking Similarly the values for sugar indicate only sugar taken as such—in tea, on porridge, &c It will be seen that the rationed allowances of meat, fats and sugar are all a great deal less than the amounts that boys at any of the schools were eating before the war On the other hand, they did not eat as much bacon or cheese as they were allowed in the spring of 1942

The boys' consumption of rationed foods in 1942 will be found in columns 5, 6 and 7 It is evident that the boys at St Butler's were making full use of their rations They were getting their quota of meat, bacon, cheese, butter and margarine, and this meant that more bacon and cheese was being eaten at St Butler's in 1942 than had been eaten in 1938 In spite of eating the whole of their butter ration, however, and nearly the whole of their margarine on their bread, these boys had only half as much fat for 1½ times as much bread (table II) as they had before the war

At St Hudson's things were quite different The boys investigated there ate only half as much cheese, meat and bacon as their rations allowed them This seemed an extraordinary thing, but inquiries were made and it seemed that it must have been true It strongly suggests that there was something radically wrong with the buying or catering departments

The boys at both public schools were eating a great deal more than their official jam ration, and the figures for jam and sugar are reminiscent of those obtained by Widdowson and Alington for a group of women in 1941 These women were found to be eating considerably less than their sugar ration and more than their jam ration The conclusion was drawn that they were eating stocks of home-made jam, and that they were saving up their sugar for the next jam-making season That the public-school boy should also do this was unexpected, but inquiries have since revealed that it was indeed the case The boys at St Hudson's, for example, were issued with 5 oz of sugar a week, and 3 oz were retained for cooking Even though 5 oz a week was less than a third of the amount that boys at this school ate before the war, they preferred in 1942 to cut down their sugar still further, and to save nearly half of it to be made into jam at home It is quite clear that jam is a highly prized food in the boarding-school dietary

TABLE I—INTAKES OF RATIONED FOODS
(oz per week)

A = St Butler's B = St Hudson's C = St Woolton's

—	Prewar intakes			Ration at time of 1942 survey	Intakes in 1942		
	Public schools		Day school				
	A	B	C		A	B	C
Butter	10 1	9 2	10 9	2	2 0	2 0	2 3
Margarine on bread	0 0	0 0	0 0	4 (total)	3 4	3 1	3 8
Cheese	0 8	0 7	1 6	3	3 0	1 7	2 3
Sugar *	17 5	16 3	13 5	8 (total)	3 0	2 8	4 3
Jam	11 0	15 2	5 1	4	12 6	8 7	6 6
Rationed meat †	28 4	24 1	20 3	9–18‡	15 5	6 6	19 7
Bacon †	2 2	3 4	2 0	4	3 4	1 4	7 0

* Excluding sugar used in cooking † Raw weight
‡ According to price

At St Woolton's, more meat and bacon were eaten than at either of the public schools, and in fact these boys were eating more than their official ration This was because, besides standing a chance of benefiting from the smaller appetities of younger brothers and sisters at home, 9 boys out of 24 were having dinner at school, 5 days a week, outside their rations The average amount of meat eaten by Wooltonians having school dinner was 23 8 oz (raw weight) a week, whereas boys not having school dinner ate an average of 17 2 oz The official allowance of meat for one school meal is twopennyworth This is equivalent to about 2 oz, so it is more than sufficient to account for the difference between these two average weekly intakes Bacon, however, was not served at any of the school dinners at St Woolton's during the weeks of investigation The large amount of bacon eaten by these boys is almost certainly due to the fact that the bacon ration, more than the ration of any other food, is in excess of younger children's accustomed intakes Fig 3 shows the average amounts of bacon eaten by boys and girls before the war, and it will be seen *that they did not begin to* eat as much as their present allowance till they were 13 years old

MILK

The average amounts of milk, taken as milk or in tea and other beverages, and in puddings, by boys at the three schools before the war and in spring, 1942, were as follows (oz per day)

	St Butler's	St Hudson's	St Woolton's
1936–38	11 8	10 5	14 6
1942	9 6	15 3	18 0

Before the war the boys at the day school had rather more milk than those at either of the public schools

Notes and News

MINESWEEPERS' MITTENS

Minesweepers handle chains and gear, and girls in the balloon barrage service know what damage a guy-rope can do, when dragged through the hands by a high wind Mittens made of string are good to wear for such work, but T J Smith and Nephew, makers of 'Elastoplast,' have found something better than string—the selvedge from crepe bandages This selvedge, which used to be returned to the works to be remade, can be knitted up into neat taut mittens, wonderfully warm and resistant to wet Before the war, Mr H N Smith used to send bundles of this selvedge to a women's voluntary organisation in Hull, which arranged for women home workers to knit it up into bath mats, shopping bags and the like At the beginning of the war this organisation became the Hull Comforts for Services Committee and originated the minesweeper's mitten Now it is producing 5000–6000 pairs a year, and over 50 other knitting parties, mainly of the WVS, are at work on mittens In 1940 about 5000 pairs were made, and in 1941 10,000, the figure expected for 1942 is 20,000 The mittens can be made very quickly according to a standard pattern They are sent, either directly or through the firm of Smith and Nephew, to Royal Naval bases all round the coast from Aberdeen to Plymouth, and to balloon barrage units Letters of appreciation bear testimony to the demand for them, a Manchester gunner, stationed on a moor, and working in the cold till 2 or 3 in the morning, wrote "I was always taught as a boy, 'Ask and you will receive,' so I'm just asking and hoping to receive"

University of Oxford

In a congregation held on Nov 21, the following degrees were conferred —

DM —H W Davies, T W Lloyd (in absence)
BM —C O Carter

Medical Honours

The following awards to medical men have been announced

DSC —T/Surgeon Lieutenant A D Bone, MB LOND, RNVR, and Surgeon Lieutenant S A C Watson, RANR

MC —Captain R D I Beggs, MB CAMB, RAMC, and Captain R P Lawson, MB LOND, RAMC

Shortage of Tuberculosis Nurses

The *Liverpool Post* for Nov 25 reports that at the annual meeting of the Liverpool Hospital for Consumption and Diseases of the Chest Mr E Otho Glover, who presided, said that the shortage of nurses was a continuing handicap to their work They could take at least forty more patients at their Delamere Forest Sanatorium if they could get the necessary staff

Royal Society of Medicine

On Tuesday, Dec 8, the section of therapeutics and pharmacology of this society will meet at 2 30 PM to discuss the ætiology of erythroblastosis fœtalis and certain hæmolytic transfusion reactions, with special reference to the Rh factor The openers will be Dr P L Mollison and Dr G L Taylor On Dec 9, at 2 30 PM, Mr E T C Milligan will deliver his presidential address to the section of proctology He will speak on the surgical anatomy and disorders of the perianal space The clinical section will meet on Dec 11, at 2 15 PM, at St Thomas's Hospital, S E 1

Saved by Chemotherapy

Speaking at a meeting of group representatives of the Hospital Saving Association on Nov 29, the Minister of Health said that in the 1915–17 epidemic of cerebrospinal fever two out of three cases were fatal With the help of sulphapyridine today four out of every five patients recovered Mr W J Martin, PhD, of the Medical Research Council, had estimated that during 1939–41 the drug had saved the lives of 10,000 men and women suffering from this disease and probably 7500 more lives from pneumonia "So, taking only two diseases," Mr Brown added, "a single drug has saved more lives than the Nazi war machine was able to destroy in the Battle of Egypt"

Appointments for Outpatients at Charing Cross

From Dec 1 an appointment bureau for outpatients will be open at this hospital from 9 AM to 5 PM Doctors are invited to telephone or write for appointments, and the public also may write for an appointment or make personal application at the hospital

Medical Casualties

The following IMS casualties have been announced

Died —Lieut Colonel W P Hogg, MB ABERD, and Lieut Colo Sukumar, FRCSE

Prisoners of War —Lieutenant B I Evans MRCS, T/Lie Colonel G F Condon, LRCPI and T/Major S G O'Neill, LM DUBI

Royal Faculty of Physicians and Surgeons of Glasg

Dr Donald Hunter will deliver the Finlayson lecture in hall of the faculty, 242, St Vincent Street, Glasgow, on W nesday, Dec 9, at 4 PM His subject will be generali diseases of the skeleton

Medical Society of London

On Monday, Dec 7, at 4 PM, at 11, Chandos Street, W Prof F Wood Jones, FRS, will deliver the Lloyd Robe lecture to this society He will speak on human progress biological theory

Pharmaceutical Society of Great Britain

At 2 30 PM on Thursday, Dec 10, at Friends House, Eus Road, London, N W 1, Mr R Melville, PhD, will delive lecture to this society on medicinal indigenous plants

Chadwick Lecture

On Tuesday, Dec 8, at 2 30 PM, at 26, Portland Pl London, W 1, Dr W Norwood East will give a Chadw lecture on the differentiation, prevention and treatment antisocial behaviour disorders

Distribution of Cod-liver Oil and Fruit Juices

Only a comparatively small percentage of the child eligible for vitamin supplements are at present receiving th and the Ministers of Health and Food are organising intensive publicity campaign to impress upon mothers importance of these preparations for the health of child especially during the winter months The supplements to be on sale at every maternity and child welfare cen Cod liver oil and orange juice are shortly to be made availa for expectant mothers on the same terms as for the unc fives

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The fact that goods made of raw materials in sh supply owing to war conditions are advertised in t paper should not be taken as an indication that they necessarily available for export

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Infectious Disease in England and Wales

WEEK ENDED NOV 21

Notifications —The following cases of infectious dise were notified during the week smallpox, 0, scar fever, 2914, whooping-cough, 1246, diphtheria, 10 paratyphoid, 5, typhoid, 6, measles (excluding r ella), 8816, pneumonia (primary or influenzal), 6 puerperal pyrexia, 137, cerebrospinal fever, 68, pol myelitis, 15, polio-encephalitis, 1, encephalitis le argica, 2, dysentery, 117, ophthalmia neonatoru 83 No case of cholera, plague or typhus fever w notified during the week

The number of civilian and service sick in the Infectious Hospi of the London County Council on Nov 18 was 1835, includ scarlet fever, 693, diphtheria, 256, measles, 214, whoop cough, 151, enteritis, 74, chicken pox, 50 erysipelas, mumps, 25, poliomyelitis, 5 dysentery, 48, cerebrospinal fe 3, puerperal sepsis, 19, enteric fever, 5, german measles,

Deaths —In 126 great towns there were no deaths fr enteric fevers, 2 (0) from scarlet fever, 7 (1) from measl 9 (1) from whooping-cough, 26 (3) from diphther 57 (10) from diarrhœa and enteritis under two years, a 21 (1) from influenza The figures in parentheses those from London itself

Liverpool, Sunderland and Birmingham each reported 3 dea from diphtheria

The number of stillbirths notified during the week w 188 (corresponding to a rate of 32 per thousand to births), including 21 in London

TYPHUS IN GALWAY

Of the 13 cases of typhus which occurred between Oct and Nov 18 in the Spiddal dispensary district, 9 were children under eighteen years The source of the outbrea Dr C F McConn tells us, was found to be the househo which originated a much more severe epidemic in 1903- The mode of dissemination being through the school hou children were primarily affected and adults only secondari In all the affected children the disease was of a mild type, the adults it presented the typical appearances There has far been one death, and the epidemic is now apparently und control The area has been closed, all migratory labo stopped, fairs banned and schools closed diets If rationing has meant a reduction in meat, then war-time diets might be expected to provide less *animal* protein The intake of animal protein had fallen at both public schools, but this was partly their own fault, and whether it matters is an open question Even war-time diets are mixed diets, and the assortment of amino-acids derived from the extra bread and vegetables may be as good for growth as those obtained from animal protein The average intake of animal protein at St Woolton's in 1942 was not much lower than the intake at that school had been in 1938, but here again boys having school dinner were weighting the figure Boys partaking of school dinner had 52 g animal protein a day, the others had 40 g

It may seem a little surprising that the boys were getting so much fat It must be remembered however, that they were consuming more cakes, biscuits, milk and cheese in 1942, and the fat in these almost made up for that lost by the restricted intakes of butter, margarine and meat

Carbohydrate intakes had changed very little, though they were somewhat higher at all three schools than they had been before the war Bread, oatmeal and other starchy foods had replaced the sugar of prewar days

The average calcium intakes were higher than they used to be at each of the three schools, but the increase at St Butler's was not statistically significant Milk and cheese were responsible for the change at the other two schools There was little alteration in the amounts of phosphorus ingested The diets contained a little less iron in 1942 at the two public schools and more at the day school National wheatmeal bread was not made compulsory till the 1942 survey was almost completed, and most of the bread eaten was white Since the introduction of the National loaf, the iron intakes will have increased by about 3 mg a day at all three schools.

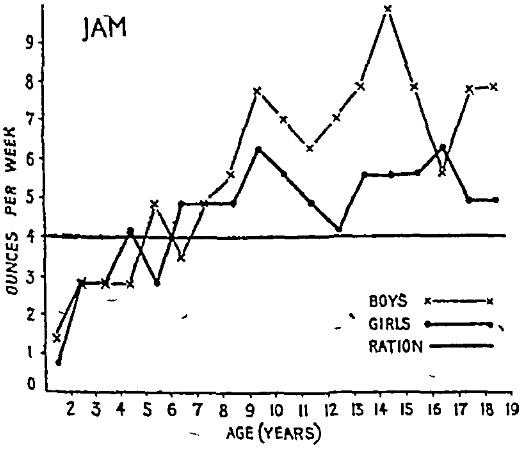

Fig 2—Prewar intakes and 1942 ration of jam

VITAMIN INTAKES

The figures for vitamins in table III are only approximations, but they give some idea of dietary trends Vitamin A and carotene have been given separately because of the difficulty of assessing one in terms of the other The figures for vitamins A and D should be regarded with great caution, for if liver is served to a few of the boys once during the week of investigation, as was the case at St Hudson's in 1936, or if herrings happen to be used, then the average intakes of vitamins A and D for the whole group appear to be very high

The war had made little difference to the intakes of vitamin B_1, but the change to National wheatmeal bread will have increased the intakes by about 110 international units a day

In prewar days one of the most striking differences between the diets of the boys at the three schools was that the day-boys had 50% more vitamin C than those at either of the public schools This was because the day-boys had more fruit and vegetables (see table IV) More than half the public-school boys had less than 30 mg ascorbic acid a day

In spring, 1942, boys at all three schools were of course affected by the shortage of fruit Three boys at St Hudson's and one at St Woolton's had some raw apples during the week of investigation The other 48 had no raw fruit at all Furthermore, raw salad, which had never been very plentiful at the public schools, even before the war, did not appear at either of them Ten boys at St Woolton's had small portions during the week of inquiry The consumption of cooked green vegetables had also fallen off a great deal, and they were never on the menu at St Hudson's As has already been seen, the boys at St Butler's and St Woolton's had increased their consumption of potatoes, the boys at St Hudson's had not The result of all these changes was a smaller intake of vitamin C at each of the schools, and at St Butler's and St Hudson's the average amounts in the diets were 19 and 15 mg a day respectively Before the war the Technical Commission (1938) recommended that all adults should receive 30 mg ascorbic acid daily and that growing children should receive more This may be an over-estimate of the vitamin C requirements (Fox and Dangerfield 1940), but no-one could view with complacency a group of growing boys with an average daily intake as low as 15 mg, even for part of the year

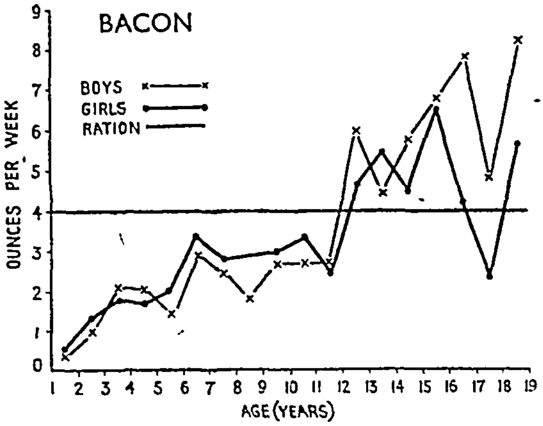

Fig 3—Prewar intakes and 1942 ration of bacon

Comments and Suggestions

If generalisations may be made from the limited data available, the diets of secondary-school boys living at home tend to be better today than those of boys at public schools This is not altogether the fault of the public schools, for they have no extra rations for school dinners, and there is every reason to believe that some of them are feeding their boys as well as they can with the rations at their disposal There is, however, positive evidence that two schools are not, and this may be true of others

TABLE IV—INTAKES OF RAW FRUIT AND GREEN VEGETABLES (oz per week)

—	St Butler's		St Hudson's		St Woolton's	
	1937	1942	1936	1942	1938	1942
Raw fruit	15 2	0 0	12 6	3 2	21 4	0 6
Raw salad (including tomato)	0 5	0 0	3 3	0 0	3 4	0 9
Cooked green veg	7 8	1 5	3 1	0 0	13 5	6 3

All these investigations were carried out in the spring

Schools *must* give boys the rations to which they are entitled The Ministry of Food cannot be expected to allow boarding-schools extra rations until they make full use of those that are already available There is no doubt that at some boarding-schools the staff are being fed better than the boys They have the same meal as the boys midday, and are then supplied with dinner in the evening This probably means that they are being fed from the boys' rations

The Board of Education (1942) has recently issued an excellent pamphlet showing clearly the amounts of rationed foods to which school boarders are entitled It also suggests the quantities of unrationed foodstuffs that should be used. It is interesting to note in this connexion that the suggested potato allowance is 8¾ lb per head per

TABLE II—INTAKES OF TOTAL CALORIES AND OF UNRATIONED "FILLING" FOODS

—	St Butler's		St Hudson's		St Woolton's	
	1937	1942	1936	1942	1938	1942
Average age (years)	$17\frac{1}{12}$	$16\frac{9}{12}$	$14\frac{7}{12}$	$14\frac{9}{12}$	$16\frac{7}{12}$	$16\frac{8}{12}$
Total calories per day	3021	2946	2917	2946	2867	3028
Bread oz per wk	47.3	69.8	45.6	71.2	54.7	68.5
Potatoes ,, ,,	36.7	59.0	38.0	39.8	40.9	63.7
Root vegetables ,, ,,	4.0	10.5	2.0	8.6	4.2	17.6
Cakes ,, ,,	6.6	10.4	7.5	13.0	11.5	16.8
Biscuits ,, ,,	3.5	5.5	1.9	7.9	2.0	2.3
Oatmeal ,, ,,	3.2	6.4	2.7	8.4	3.3	3.6
Sweets and chocolate ,, ,,	10.5	6.3	7.5	7.8	8.4	3.3
% of calories from—						
Bread	14.4	21.6	14.7	22.6	20.2	20.7
Vegetables	6.1	5.3	5.8	5.3	7.6	9.6
Cakes and biscuits	5.8	8.9	4.9	12.2	8.8	11.9
Sweets and chocolate	4.7	3.8	4.8	4.9	5.0	2.0

TABLE III—CHEMICAL COMPOSITION OF THE DIETS

Year	1937	1942	1936	1942	1938	1942
Total protein g per day	95	88	86	86	85	92
Animal protein ,, ,,	62	42	53	33	51	47
Fat ,, ,,	123	106	116	106	118	113
Carbohydrate ,, ,,	398	428	397	430	379	426
Calcium ,, ,,	0.73	0.83	0.69	0.87	0.78	1.05
Phosphorus ,, ,,	1.48	1.41	1.43	1.40	1.36	1.52
Iron mg ,, ,,	17.9	15.9	19.1	15.6	15.3	17.2
Vitamin A IU per day	2753	1369	6424	1362	3138	2231
Carotene ,, ,, ,,	1852	1432	2318	1248	2572	2075
Vitamin B_1 ,, ,, ,,	473	411	475	442	509	525
,, C mg ,, ,,	33	19	34	15	52	32
,, D IU ,, ,,	295	444	253	113	236	87

Many of the boys at St Woolton's were receiving ⅓ pint of school milk a day; those at the two public schools were not. Since the time of the pre-war survey the country has become much more milk-conscious, and this is reflected in the fact that, in spite of restrictions, the milk intake was higher at St Woolton's and St Hudson's in 1942 than it had been in 1936–38. In order to appreciate the significance of the 1942 intakes, the milk allowances for all school-children, whether boarders or day pupils, must be borne in mind. First, they have a priority "household" allowance of ½ pint a day, and in addition, they are entitled to at least ⅓ pint of "school milk" a day, making a total of ⅚ pint or 16.6 oz on 5 days during the week. The average milk allowance over the whole week, therefore, is 15 oz a day. The boys at St Woolton's were clearly getting all their allowances. Those having school dinner were receiving extra milk in puddings, and they were getting more (average 22.5 oz a day) than those having dinner at home (average 15.3 oz a day).

At St Hudson's the boys taking part in this investigation all came from one house, and they were receiving 15.3 oz a day. This probably overstates the milk consumption of the school as a whole, for, although all boys had their meals together, the ordering of school milk was in the hands of the housemasters. In this particular house all boys had school milk. In some of the others they did not.

St Butler's was not taking advantage of the "milk in schools" scheme. Hence, boys there were only getting ⅔ as much as boys at St Hudson's, and they were, in fact, having less than half a pint a day. Inquiries have shown that St Butler's is not the only public school which omitted to take the "school milk" to which it was entitled in 1942. These schools possibly regard the "milk in schools" scheme as a charitable enterprise which it is beneath their dignity to accept.

CALORIES AND UNRATIONED FOODS

Before the war the rationed foods set out in table I supplied a boy at each of the three schools with an overall average of 950 calories a day. In the spring of 1942 a boy at St Butler's obtained an average of 559 calories from these foods; one at St Hudson's could only count on a meagre 395 calories a day, but a Wooltonian got 612 calories out of them. Furthermore, in 1942, boys were not getting the calories to which they were accustomed before the war from unrationed foods such as fruit fish, which have now become scarce. They were suffering a reduction of calories from the restricted fat and sugar for cooking. Were they making good deficit, and if so, how? Table II answers both questions. In previous tables the results for all between 14 and 18 years have been averaged, but, the maximum calorie requirement is not reached till years, comparisons have here been limited to boys similar ages.

It will be seen that the calories had not fallen. Thus the principle first enunciated by McCance and Widdowson (1941), after an experimental study of rationing, was confirmed. They laid it down that if healthy active people were deprived of sources of calories to which they were accustomed, appetite and instinct would drive them to make good the loss by eating more of the unrationed and plentiful foods. The boys at all three schools were now eating more bread, more root vegetables and more cakes than boys of a similar age had eaten before the war. The public-school boys were eating more biscuits and porridge. They should all have been eating more potatoes, and an increase in consumption which was statistically significant-had in fact taken place at St Butler's and St Woolton's. At St Hudson's, however, the average amount of potatoes eaten in 1942 was within 2 oz a week of the amount eaten in 1936. Shortage of labour was partly responsible, for it is of course easier to provide more loaves of bread than to peel and prepare more potatoes and to serve them twice a day instead of once. Be that as it may, an average potato consumption of less than 6 oz a day by 14-year-old boys in the third year of the war needs a great deal of excusing. Boys like potatoes and will eat them if they are provided. The small helpings of potatoes are the one object of criticism in the school dinners provided at St Woolton's. The average portion weighed about 3 oz. It was noticed, however, that boys who had had dinner at school during the week would eat 12 oz or so of potatoes for dinner on Saturdays and Sundays.

A serious reflection on the catering arrangements at the two public schools was that the boys should be buying in the tuck-shop, or having sent from home, more cakes and biscuits than they were before the war.

Sweet rationing was not in force at the time of the 1942 survey, but a ration even of 4 oz a week will have restricted the consumption of sweets at the two public schools and will have forced the boys to make good still more of their calories from unrationed foods.

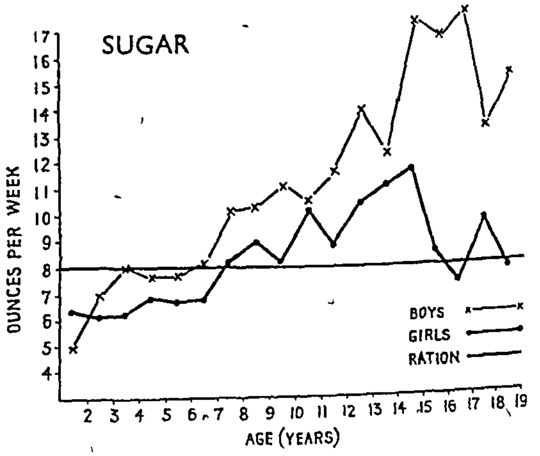

Fig. 1—Prewar intakes and 1942 ration of sugar

CHEMICAL COMPOSITION OF THE DIETS

Table III shows the average amounts of protein, fat, carbohydrate, Ca, P, Fe, and vitamins A, B_1, C and D in the diets of the boys at St Butler's, St Hudson's and St Woolton's before the war and in spring 1942. As in table II the comparisons have been limited to boys of similar ages.

There has been no significant change in total protein consumption. This bears out the finding of McCance and Widdowson (1941), confirmed by Widdowson and Alington (1941), that war-time diets are *not* low-protein

STATE OF NUTRITION OF 2037 OXFORDSHIRE SCHOOL-CHILDREN IN DECEMBER, 1939, COMPARED WITH 499 OF THE SAME CHILDREN IN FEBRUARY, 1941, AND WITH 981 OF THEM IN JUNE, 1942

Group	Area	Examined	Total	Boys	Girls	Cases with signs of vitamin deficiency *		Nutrition †			
						Cheilosis cases	Rickets cases	Excellent (%)	Good (%)	Subnormal (%)	Cases
A aged 6–7 in Dec 1939	Rural	Dec 1939	531	260	271	4	27 (5%)	32	58	10	NE
		Feb 1941	316	145	171	1	6 (1·8)	29	58	12	NE
		June 1942	292	145	147	4 (3 new)	4 (1%) (2 new)	41	46	11	18
	City	Dec. 1939	506	246	260	1	10 (2%)	52	39	7	NE
		June 1942	294	149	145	1 (new)	3 (1%) (2 new)	51	42	6	1
B aged 10–11 in Dec 1939	Rural	Dec 1939	508	259	249	5	19 (4%)	29	59	12	NE
		Feb 1941	183	95	88	3 (new)		35	53	12	NE
		June 1942	234	115	119	1 (new)		33	53	13	56
	City	Dec. 1939	492	217	275	1	5 (1%)	46	47	6	NE
		June 1942	161	75	86			45	50	4	4

* No cases of phrynoderma, xerophthalmia and congested gums were found at any examination.

† There were no cases of bad nutrition NE = Not examined

SUMMARY

The nutritional state of 2037 school-children from Oxfordshire homes in city and rural areas, examined in December, 1939, has been compared with that of 499 of the same children who were examined again in February, 1941, and with that of 981 of them examined in June, 1942 In the different age-groups, the nutrition of only 4–13% was classed as subnormal, in 87–96% it was classed as good or excellent

In general the city children appeared rather better nourished than the rural children, but the latter showed some improvement during the period under observation

CONTROL OF PULMONARY TUBERCULOSIS IN INDUSTRY

L. BANSZKY M D BERLIN, L M S S A
MEDICAL OFFICER TO PHILIPS RADIO FACTORIES

AT the time when mass radiography is in the public eye and being introduced as an essential part of medical examination in the Services and industry, it may be of interest to show the results of those large-scale radiological examinations which have been carried out in England and abroad during recent years.

Braeuning, in Germany in 1928, first reported on mass radioscopy; he examined 4789 apparently healthy people by fluoroscopy Details of this report are not obtainable During the following years several large-scale radiological examinations—all of them by fluoroscopy—were carried out by different investigators on the Continent Table I gives the result of all mass radiological examinations on which I have been able to find reports up to Sept 1, 1942, in different countries The method used, the numbers and occupations of those examined and the results as stated by the authors are shown The people selected for the earlier examinations came from different age and society groups; they included children, university students, soldiers, policemen and industrial workers, but since most of them were male, no definite conclusion about the sex-incidence of pulmonary tuberculosis could be drawn from the figures

The first systematic radiological examination of the chest of industrial workers was undertaken in 1932 by Burger in Holland, when the Philips Radio Works in Eindhoven introduced the fluoroscopic examination of the chest of employees as part of the routine medical examination before starting work and a periodic repeat-screening of employees at an interval not exceeding 1¼–2 years But apart from X-ray examination of new entrants and suspects under observation for pulmonary tuberculosis, more ambitious schemes (such as the periodical screening of contacts of tuberculous subjects and of school-children in Philips' schools) have been put into practice, so that from 1932 to 1940 over 100,000 screenings were carried out in Eindhoven Burger (1935–38) and van Weel (1935) have published the result of these screenings in new entrants between 1932 and 1938

Routine radiological examination of new employees was started at the English branch of the Philips radio

TABLE I—MASS RADIOLOGICAL EXAMINATIONS CARRIED OUT UP TO SEPT 1, 1942, IN DIFFERENT COUNTRIES

Country author and year work was done	Method	Cases	Occupation	Active	Doubtful	Inactive	Open
				%	%	%	%
Australia							
Galbraith (1941)	MR	100 000	Recruits	0·56		0·47	
Cooper (1940)	MR	9000	Recruits	0·55			
Canada							
Jones (1940)	MR		Recruits	1·0			
Gt Britain							
Banszky (1936–41)	S		Ind wkrs	0·5	0·59	3·17	0·29
Dudley Fitzpatrick (1941)	MR	18 000	RN recruits	0·24			0·1
Ellman (1941)	MR	601	Recruits	0·83		1·95	
Hall (1941)	S	1370	Ind wkrs	0·51	1·32		
Hart Hilton, Morland (1940)	R	417	Students	1·4			
Trail (1942)	MR	19 969	RAF recruits	0·27		1·17	
Argentine							
de Abreu (1936)	MR	14 000		3·78			
China							
Hall, Chang (1934)	?			17·9			
France							
Jullien ..	S	145,313	Recruits	0·18			
Germany							
Berner (1939)	?	55 000	Army recruits, students	1·5			
Braeuning (1932)		2821	Sch-children	0·43			
Büsing (1933)	S	3771	Ditto	0·8		0·6	
Franz, Muller (1932)	S	38 000	Recruits	0·08		0·17	0·09
Kattentidt (1932) (1929)	S	10,171	Students	0·19	0·79	21·7	0·37
Kayser-Petersen (1928)	S	951	Students	1·3		..	0·5
Riemer (1932)	S	1863	Students	0·48	0·21	21·1	0·42
Holland							
Bak (1935)	S	805	Adults	0·37	0·37	0·5	
Burger (1932–34)	S	3816	Ind wkrs	1·3	0·8		0·13
„ „ (1935)	S	1767		0·4	1·0		0·3
„ (1936)	S	2988		0·24	0·24		0·07
„ (1937)	S	5535		0·3	0·4		0·04
„ (1938)	S	2850		0·04	0·5		0·03
van Weel (1935)	S	12,063		0·6	1·0	5·1	0·27
Poland							
Czezowska, Grabowski, Hornung (1930) ..	S	3005	Students	1·6	5·6	17·2	
Russia							
Moskowski (1941) (Vetka mine)	S	1315	Miners	1·6			0·17
Moskowski (1941) (Gorlowska)	S	987	Miners	1·4			0·1
Switzerland							
Hopf (1934)	S	4880	Recruits				0·06
U.S.A.							
Edwards Ehrlich (1941)	R	16 150	Recruits	0·43		0·63	
Hetherington McPhedran (1931)	?	?	Students	3·9			
Plunkett (1941)	R	1401	Recruits	1·4			
Sawyer (1921–40)	R	3280	Ind wkrs	2·3			
(1940)	R			0·02			
Soper Wilson (1930–31)	R	3000	Students	1·8			
Stiehm (1935)	R	529	Students	1·5		7·3	

R = full size radiography MR = miniature radiography
S = screening

week Allowing for waste, this comes to 16 oz a day Much greater use should certainly be made of potatoes, and they should be served at least twice a day It is realised that the domestic staff and kitchen equipment at many boarding-schools are inadequate Some staffs are catering for an evacuated school as well as their own, but in spite of these difficulties it seems that better food might in many cases be served Menus have been obtained from public schools other than the two investigated here, and some show a singular lack of imagination and adaptation to war-time conditions At St Hudson's, breakfast and dinner were reasonable meals, but tea often consisted of bread, margarine and meat paste, and nothing whatever was provided during the evening Potatoes were not often served at any time other than dinner, and no cooked cheese dish ever appeared A greater variety of dishes should be introduced, and much more use of vegetables, fresh and dried, should be made Not only would this add variety and interest to the food, but the intakes of calcium and vitamins A and C would be increased There should be close cooperation between the garden and the kitchen During war-time, at any rate, some members of the domestic staff should remain on duty during the summer holidays, to store and preserve the garden produce At one school the entire crop of tomatoes grown in the school garden had to be given away, as the school was closed down when they ripened and there was no-one available to deal with them

Large institutions usually buy their meat as whole carcasses Where this is done, there should be an adequate supply of fat to give dripping for breakfast or tea at least once a week, and still to leave enough fat for frying Most boys are fond of dripping and fried foods, but they dislike fat meat Instead of serving meat with most of the fat attached, the fat should be removed beforehand, rendered down, and used for frying potatoes and other vegetables

Finally, the boys themselves must be taught to appreciate the gravity of the food situation There can be few boys of public-school age who are not aware of the shortage of shipping and the need for economy in the use of fuel If food designed and fit for human consumption is relegated to the swill bin, just so much of our effort is wasted These facts should be pointed out to them anew, in relation to their own dinner-plates The boy who rejects good food is as much the Führer's friend as any brown-shirted member of the Hitlerjugend, and should be told so

Summary

Individual dietary surveys were made in the spring of 1942 on boys at two public boarding-schools and at a large secondary day-school The data have been compared with the rations in force at that time and with the diets of boys at those schools before the war

Rationing has reduced the calories which the boys were in the habit of obtaining from meat, fats and sugar At all three schools, however, the total calorie intakes have been maintained at their prewar levels by an increased consumption of bread, oatmeal, cakes, biscuits and root vegetables At two schools the potato consumption had also increased, at one it had not

One of the two public schools was not supplying the boys with their full ration of meat, bacon or cheese The other was not taking advantage of the "milk in schools" scheme

The diets of the boys at the secondary school were better than those of the boys at either of the public schools in that they provided more potatoes, more green and root vegetables, and more meat and bacon

All the diets contained as much protein, Ca, P, Fe and vitamin B_1 in 1942 as they had done in prewar days The public-school diets in 1942 provided very much less animal protein and vitamin C than they had done before the war or than the diets of boys living at home provided in 1942 The average vitamin C intake at one public school was only 15 mg a day

Even if boarding-schools make full use of all their rations, boys at day-schools must be considered to have an advantage over boarders, partly because boys living at home are able to benefit from the rations allowed their younger brothers and sisters, and partly because they can have dinner at school, 5 days a week, outside the rations

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We wish to thank medical officers, masters and boys at St Butler's, St Hudson's and St Woolton's for their ready cooperation in a tiresome investigation, and Miss C N Edgecombe for her assistance in working out the data E M W is in the whole time service of the Medical Research Council

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NUTRITION OF OXFORDSHIRE IN WAR-TIME

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In December, 1939, records were obtained of the nutritional state of 3050 children whose homes were in Oxfordshire They were divided into three groups, (A) aged 6–7, (B) aged 10–11, (C) aged 13–14, and were examined in 41 different rural places and 19 Oxford city schools Evacuees were carefully excluded from this survey Fourteen months later the same rural schools were revisited[1] and the children examined again, they did not show any signs of increasing nutritional deficiency, and no deterioration in the state of nutrition as assessed by the same observer Some degree of deficiency of the vitamin-B_2 complex had been present during the period of observation as indicated by 15 cases of angular stomatitis (cheilosis)

In June, 1942, the original Oxfordshire rural and Oxford city children were examined again, of whom 981 were traced, 526 rural and 455 urban The same nutritional tests were applied as already reported for the previous surveys *The comparative results are summarised in the* table Too few of the 1013 children in group C, aged 13–14 in 1939, remained at school to permit of comparison In the rural areas there was a significant improvement in the children's nutrition Sufficient school milk was now available, and many schools were providing dinners The results of home inquiries indicated in most cases a more regular source of income owing to war-time employment and allowances Many families had increased their cultivation of vegetables, and others were keeping poultry Rural families tend to go early to bed and double summer-time did not appear to lengthen unduly a child's day In places where school dinners were not yet arranged or had only recently been introduced 5 cases of cheilosis were seen There was a decrease in the incidence of rickets in rural areas which may be explained partly by the increasing age of the children, but also by the widespread introduction of school milk

The nutrition of Oxford city children, originally rated higher than that of the rural children, had remained at about the same level as in 1939 Though parents complained of shopping difficulties, the available facilities for school dinners were often not utilised if the meals were served in some place other than the child's own school Teachers considered that double summer-time had adversely affected the hours of sleep of the younger children The only urban case of cheilosis was in a boy from a good home whose sister was well nourished, and was due to defective absorption

In view of the disturbance of the natural ossification of the spine spondylosis deformans which has been found to be fairly common among some groups of English children,[2] the presence or absence of spinal dorsal curvature associated with the mottled enamel of dental fluorosis was noted Among rural children there were 18 such cases in group A and 56 in group B, in the city children there was one case in group A and 4 in group B Suggestions were made for remedial treatment ion require special consideration, I re-examined patients till working after at least 3 years in the factory During he 3 years they were not allowed to work on fumy or hemical processes or in hot atmosphere, but their working hours were not shortened Of the original 244 cases 1 (35 6%) were still in the factory after 3 years, 28 being nen and 53 women Of these, 8 (3 men and 5 women) howed signs of activity in the lesion on repeat-screening nd required monthly observation—that is, 10% of the vhole group Whether this was due to new exogenous nfection or to an activation of a previously inactive rocess, I cannot say

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[1] Wilson, D C *Lancet*, 1941, ii, 405

[2] Kemp, F H, Murray, M M and Wilson, D C *Ibid*, 1942, ii, 93

The incidence of active (including open) tuberculosis ver the 5 years averaged 0 5% in Mitcham, and the umber of employees sent for treatment on account of ctive tubercle was 60 (16 men and 44 women) In 53 ases (13 males and 40 females) the diagnosis of active lisease was made after the first examination, including adiography, sedimentation-rate, blood-counts and putum test, in 7 (3 men and 4 women) the diagnosis vas made after the employee had been under observation or a while

In 34 (10 men and 24 women) of the 60 active cases the lisease was open (55%) The presence of Koch's bacilli vas demonstrated in the sputum, the gastric contents vere not examined

That there is urgent need of a uniform national scheme or tracing and controlling pulmonary tuberculosis is hown by the fact that during the 5 years 41 employees (17 men and 24 women) left the factory while under bservation for active tuberculosis and were lost sight f, among those were 3 men called up as fit for military ervice

SUMMARY

The results of mass radiography in 37 reported series of cases are tabulated

Fluoroscopic examination of industrial workers in England during 5 years showed an incidence of active pulmonary tuberculosis twice as high in women as in men (0 63% women, 0 33% men) When incidence-rates of tuberculosis in industrial workers in two branches of the same factory—one in England and another in Holland—were compared, a higher rate in women was found in England and a higher rate in men in Holland

Comparing five branches of the same factory (one in England, three in Holland and one in Belgium), the highest incidence for active tuberculosis was found in Belgium and the next highest in England The incidence of active and doubtful tuberculosis is exactly the same in the English and two of the Dutch branches, but double that rate in Belgium and slightly lower in one Dutch factory

Of active cases who had had sanatorium treatment 34% returned to work in the Eindhoven (Dutch) branch and 15% in the English branch The relapse rate among treated cases after return to factory work was 27% in Eindhoven and 22 2% in Mitcham

Some patients with doubtful lesions developed signs of activity while working in the factories, while others showed improvement In Eindhoven, the percentages of those who deteriorated ranged from 7 to 9 5 during the years 1935–38 ; in the English factory the average figure over 5 years was 5 6% Improvement in symptoms was noted in percentages of cases ranging from 7 to 40 in Eindhoven over the same 4 years, and the average English figure over 5 years was 10%

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COLD IN THE TREATMENT OF DAMAGE DUE TO COLD

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TISSUES damaged by cold may be regarded as being in one of three states

1 *The State of True Frostbite*[1]—The tissues in this state have generally been regarded as "killed" by cold, some investigators regarding the death as due to irreversible physico-chemical causes and others to destruction by ice crystals Others have blamed thrombosis for the necrosis which occurs, but though thrombosis may occasionally be seen it is a secondary phenomenon and not the cause of death The changes are really due to stasis The capillary walls, weakened perhaps by nervous causes, by crystal formation or by anoxia, become, during the thaw, freely permeable to plasma, but only in extreme cases to red cells The fluid part of the blood leaves the particulate cells stranded in the vessels, which become silted up Intravascular agglutination takes place, followed by asphyxia of tissues The living body then casts off the damaged member It is often forgotten that gangrene does not develop in the dead Whether from frostbite, thrombosis or embolism, necrosis is a vital process

Solidification is not the essential sign of true frostbite, or death of the tissues its invariable sequel I have many times seen a nose grown suddenly white in a high wind and by promptly covering it with my hand prevented further harm In a recent investigation I have more than once accidentally frozen my finger tips solid without permanent damage The tails of mice frozen hard are not entirely lost, the final destruction depending on the time of freezing The legs of cats may be frozen so hard that they emit a ringing note when tapped with a chisel, yet recover with no loss of tissue In these examples, there was not time for the essential capillary damage to occur.

In the field such damage occurs very quickly, and no measure other than the instant application of gentle warmth no greater than that of the human body can affect the issue The tissues are damaged beyond repair and will be cast off Treatment can be directed only to the avoidance of further damage and of sepsis

2 *The State of Chilling*—Even when the cold has been so great and has lasted so long that true frostbite has occurred, there lies between the doomed tissues and those untouched by cold an area in which the damage is less severe and necrosis not inevitable When the cold has been slight, the whole tissue may be in this state, a condition known clinically as trench-foot and immersion-foot The essential damage in this area is also in the capillaries, but the loss of fluid from them is less massive and silting up does not take place Nevertheless, though the circulation continues it is seriously handicapped The sudden strain which falls on the capillary walls when, during thaw, the arterioles relax, produces an œdema which, conditioned by the high pressure at the arterial end of the capillaries, compresses them at the lax venous end A mild anoxia follows, which, added to that already produced by vasoconstriction, may have serious consequences The clinical condition is very like that seen in senile diabetes, in which long-continued mild anoxia, due to arteriosclerosis, leads to demyelination of the peripheral nerves and to consequent "neu-

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[*] In receipt of a grant from the Medical Research Council

[1] The evidence for statements in this paragraph is in course of publication

factory at Mitcham in 1934 These examinations consisted in the first 2 years of screening only, but from 1936 onwards facilities for full-size radiograms, sedimentation-rate estimation, sputum test and blood-counts were provided for all suspected cases The percentage findings are shown in table II

These figures show that the incidence of active and open pulmonary tuberculosis among a group of women industrial workers in England is nearly double that among men doing the same work (men 0 33%, women 0 63%), and when all active and inactive tuberculous processes are included about 25% higher than in men (men 3 5%, women 4 5%)

To compare the incidence of pulmonary tuberculosis in employed and previously X-rayed workers with the rate in new entrants, repeat-screening was undertaken in Philips factories both in Eindhoven and Mitcham Figures of these repeat-screenings are available from Eindhoven for the years 1936, 1937 and 1938 and from Mitcham for 1936 only, because labour problems during the following years prevented any repeat screening on a large scale The Eindhoven figures for 1936–38 inclusive are given in table III

TABLE II

—	% of all entrants	% of men entrants	% of women entrants
A Lung affections (active, open, doubtful, inactive, cyst, bronchiectasis, &c)	4 1	3 5	4 5
B Active and open	0 51	0 33	0 63
C Doubtful (under observation for activity)	0 58	0 63	0 53
D Inactive	2 8	2 4	3 0

The comparatively small percentage of active cases found among new entrants is explained by the fact that many of those classed under this heading in Eindhoven had been employed before by the same firm, but had been temporarily out of work on account of trade fluctuation These had therefore been previously screened and from the point of view of tuberculosis tracing were a selected group

A comparison has been made of the incidence of pulmonary tuberculosis among new entrants and old employees in the Eindhoven and Mitcham factories The Dutch figures derive from the period 1932–34 and the English ones from 1936, but they throw some light on the incidence of pulmonary tuberculosis in the two countries Table IV shows that in both factories active tuberculosis was only a third to half as common among old employees as among new entrants

TABLE III

—	—	Open (°/₀₀)	Active (°/₀₀)	Doubtful (°/₀₀)
1936	New entrants	0 7	2 4	2 4
	Old employees	0 2	1 3	1 3
1937	New entrants	0 4	3 0	4 0
	Old employees	0 6	2 9	6 0
1938	New entrants	0 3	0 9	5 0
	Old employees	0 2	0 6	4 0

It is noteworthy that whereas in England tuberculosis was commoner among women, in Holland it was commoner among men Thus among new entrants in England the incidence of all forms of tuberculosis was 1 8% for men and 3 2% for women, while in Holland the figures were 2 3% for men and 1 8% for women, among old employees the total incidence in England was 1 6% for men and 2 1% for women, compared with 1 9% for men and 1 5% for women in Holland The preponderance of men in Holland is found only in the doubtful and open groups, in the active group, as table IV shows, women preponderate slightly

Fluoroscopic examination of new entrants in the various branches of the Philips factories in 1938 showed the incidence of pulmonary tuberculosis to be as shown in table V

TABLE IV—PERCENTAGE INCIDENCE OF PULMONARY TUBERCULOSIS AMONG NEW ENTRANTS AND OLD EMPLOYEES AT THE MITCHAM AND EINDHOVEN FACTORIES

—	New entrants			Old employees		
	Total	Men	Women	Total	Men	Women
Open tubercle—						
Mitcham	0 2	0 0	0 3	0 2	0 1	0 3
Eindhoven	0 3	0 4	0 01	0 1	0 1	0 1
Active tubercle—						
Mitcham	0 8	0 3	1 2	0 2	0 1	0 3
Eindhoven	0 9	0 7	1 0	0 4	0 4	0 5
Doubtful—						
Mitcham	1 6	1 4	1 7	1 4	1 4	1 5
Eindhoven	1 0	1 2	0 7	1 3	1 4	0 9

As far as active tubercle goes, the Brussels branch shows the highest and the Mitcham branch the next highest incidence, but taking active and doubtful processes together the Brussels branch has nearly double the incidence of the Mitcham branch (3 6% Brussels, 1 68% Mitcham), but the Eindhoven, Hilversum and Mitcham branches have exactly the same incidence (1 7%) and only Tilbury (Holland) has a lower one

EFFECT OF FACTORY WORK ON TREATED CASES

What percentage of the sanatorium treated workers can take up factory work after completion of treatment, and how many will relapse, even on light physical work and in selected surroundings? In Eindhoven during the years 1932–38 460 active (open and closed) cases were sent for sanatorium treatment, of whom 155 have returned to work (33 9%) In Mitcham during the five years 1936–41, 60 active (open and closed) cases were sent back to their own doctor for treatment (16 men and 44 women) of whom 9 (3 men and 6 women) have returned to work after completion of treatment (15%) Circumstances differ in Eindhoven and Mitcham In a small town like Eindhoven cases can be followed up, but at the Mitcham branch many sanatorium-treated workers moved to different districts or preferred easier occupations than factory work and were lost sight of The Mitcham figures are thus not an accurate example of workers who can take up factory work after treatment, and the Eindhoven ones should be considered as the more reliable of the two

TABLE V

—		Active (%)	Doubtful (%)
England, Mitcham		0 87	0 81
Holland	Eindhoven	0 42	1 3
	Hilversum	0 5	1 2
	Tilbury	0 5	0 5
Belgium, Brussels		1 3	2 3

Burger's figures in Eindhoven during the years of 1936–37–38 for relapses after return to factory work are as follows 1936, 27%, 1937, 26%, 1938, 37% These relapses were seen within 3 years after the quietening down of the lung process In the Mitcham branch of 9 patients who returned to work after treatment during 1936–41, 2 suffered relapse (22 2%) The effect of factory work on doubtful cases (where activity cannot be determined at the first examination and the patient is allowed to work in suitable surroundings in the factory while under observation) can also be shown both in the Mitcham and the Eindhoven records Burger found that doubtful cases changed to active ones in the following percentages 1935, 7%, 1936, 9 5%, 1937, 8 5%, 1938, 7 5% In my cases the average over 5 years was 5 6%

Changes for the better as well as for the worse are to be seen in the same group of doubtful cases Quietening down of doubtful cases with disappearance of all active signs was seen by Burger in the following percentages of cases 1935, 7%, 1936, 35%, 1937, 40%, 1938, 30% I found in Mitcham that an average of 10% of doubtful cases quietened down over 5 years

To determine whether calcified primary processes without any sign of activity found on the first examinaof these conditions should therefore be

Ancient tradition and modern experiment combine to suggest that while the patient himself is kept warm the affected tissue should be cooled , A refrigeration apparatus is described by means of which this object may conveniently be attained

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FEBRILE ILLNESS IN SMALLPOX CONTACTS

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Conybeare (1939) drew attention to a symptom complex which he noted in 7 of 16 smallpox contacts, and which he suggested might be examples of variola sine eruptione More recently Bowe (1942) has reported a febrile illness in 3 out of 7 contacts in explanation of which a similar reason was advanced In Conybeare's cases, vaccinia seemed unlikely since in one of them there had been no recent vaccination It is not clear from Bowe's records whether vaccination was successfully carried out in all of his cases As a rule, however, smallpox contacts are revaccinated at the time of their contact, so that confusion between a reaction to vaccinia and one to variola might well occur

Napier and Insh (1942) have recently reported febrile reactions in 40 out of 92 Glasgow smallpox contacts under their care They decided that 30 of these 40 reactions were due to vaccinia, and 2 to smallpox , the remaining 8, which were difficult to classify, were finally relegated also to the vaccinia group

As a result of the outbreak of smallpox in Glasgow, part of this hospital was set aside for the reception of smallpox contacts , 45 were admitted and were vaccinated or revaccinated after admission Since the rest of the hospital was to continue as an infectious disease hospital, vaccination was offered to all remaining patients, and in the next few days 89 persons were vaccinated with material from the same source as that from which the contacts were inoculated So far as I am aware no-one has previously compared two similar groups of people, contacts and non-contacts of smallpox, vaccinated under similar conditions This paper is an attempt to do so The age-distribution of these two groups is shown in table I

TABLE I—AGE-DISTRIBUTION OF VACCINATED PERSONS

Age group (yr)	Contacts		Non contacts	
	Primary	Revacc	Primary	Revacc
0– 5	4 (2)	1 (0)	10 (6)	4 (3)
6–10	3 (2)	2 (2)	6 (4)	3 (3)
11–15	2 (2)	4 (1)	1 (1)	4 (1)
16–25	3 (3)	8 (1)	3 (1)	4 (2)
25 +	0 (0)	18 (5)	0 (0)	54 (11)
Totals	12 (9)	33 (9)	20 (12)	69 (20)

The figures in parentheses indicate the numbers in the different groups who showed a febrile response

A febrile reaction was observed in 18 (40%) of the contacts and 32 (36%) of the non-contacts , the mean duration of fever (table II) was slightly greater in the contacts, but the difference is not statistically significant

Table III shows the day of onset, after vaccination, of the febrile reaction In the contacts, the mean maximum temperature was 99 8° F , noted on the eighth day , in the non-contacts the mean maximum was 99° F , also noted on the eighth day

TABLE II—DURATION OF FEBRILE REACTION

—	Days						Mean
	1	2	3	4	5	6	
Contacts	8	1	5	2	2	0	2 9
Non contacts	18	5	3	3	1	2	2 1

The symptoms complained of were, in contacts, headache (2) , pain in back of neck (2) , general malaise with syncope (1) In non-contacts they were drowsiness (4) , nausea (3) , abdominal pain, headache, backache, vomiting (1 each) . Two patients, both contacts developed rashes , one a papular urticaria on the groins , the other a macular eruption on the lower abdomen and buttocks One man, a non-contact, had glycosuria for one day

DISCUSSION

The results in the two groups, contacts and non-contacts, vaccinated at the same time with similar material and kept under similar observation, show no significant differences The figures supplied by Conybeare and Bowe (10 of 23 contacts) suggest that the incidence of the reaction described by them is high In observing 45 contacts one might have expected, therefore, to see several examples One of the contacts developed modified smallpox and was removed, so that one can infer that exposure (in some cases of a very close nature) had occurred If the observations of Napier and Insh are considered with mine, out of 137 contacts under close observation not one showed a febrile reaction which, after careful consideration, could be described as variola sine eruptione

TABLE III—DAY OF ONSET OF FEBRILE REACTION

—	Days														Mean
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Contacts	0	0	1	1	2	4	1	5	1	2	0	1	0	0	7
Non contacts	0	3	2	5	9	1	3	4	1	3	1	0	0	0	5

The conclusion seems justified that caution must be exercised in accepting alleged cases of variola which show no more than a few days fever with or without subjective symptoms It seems reasonable to expect cases of variola sine eruptione to develop in vaccinated people, by analogy with the results obtained in measles contacts who receive convalescent serum If such reactions do occur, they should be most manifest in the personnel of smallpox hospitals Dr John Watson of the smallpox hospital states in a personal communication that he has not seen any such illness The experience here was that no reaction was seen among the contacts which could not be paralleled in non-contacts vaccinated at the same time

I wish to thank Sir Alexander Macgregor, medical officer of health, for permission to publish these notes, and Dr Thomas Anderson, physician-superintendent of Knightswood Hospital, for his advice

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Conybeare, E T (1939) *Ibid* i, 813
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Prof F E Tylecote has been elected chairman of the Manchester public health committee Professor Tylecote was also recently elected president of the Royal Manchester Institution

PADDINGTON MEDICAL SOCIETY —A meeting of this society will be held on Tuesday, Dec 15, at 2 30 PM, at St Mary's Hospital, W 2, when Dr Joseph Whitby will read a paper on neurosis in general practice during the second and third years of the present war ritis " In extreme cases, gangrene may develop In chilled tissues a more severe anoxia is needed to produce gangrene than to produce degeneration of nerves It is in this state that treatment is logically possible

3 *State of Physiological Reaction* —The tissues in this state are responding normally to damage Adaptation has not broken down No treatment is required

PRINCIPLES OF TREATMENT

It follows that we need consider therapeutically only the state of chilling, the state of some of the tissue in frostbite and of all of it in trench-foot and immersion-foot It is traditional that warmth greater than that of the human body is harmful This fact was recognised by Larrey (1812) during Napoleon's retreat from Moscow Smith, Ritchie and Dawson (1915) showed that when damage by cold has occurred water at only 37° C causes rapid œdema or a rapid increase in œdema already present, a fact confirmed by Lewis and Love (1926) I have shown that if the tail of a mouse is frozen almost twice as much tissue is lost if the mouse is held in the hand before a warm fire It is shocking to learn that only last winter patients with frostbite were treated with the electric cradle, mustard plasters and hot fomentations Such treatment is sure to increase transudation from the damaged capillaries by still further increasing arteriolar dilatation In addition, between the part irretrievably doomed to gangrene and the part never endangered there is probably an area striving for life in a state of anoxia Heat to this part will increase its metabolism and its oxygen requirements, and will encourage the growth of bacteria Frost-bitten parts must be kept cool (Greene 1941)

Lake (1917) has shown that the survival-rate of tissue-cultures is greatest between — 5° C (at which temperature they die) and + 5° C (at which point katabolic processes are predominant and harmful metabolites accumulate), the best temperatures being in the neighbourhood of 0° to + 5° C Lambert (1913) found that embryonic chick tissues survived best at + 5° C That blood will survive undamaged at + 2° C for three weeks has become well known since the establishment of blood banks Allen (1939) has shown that tissue necrosis after ligation of a limb is increased by heat and diminished by cold Dickson Wright (1940) pointed out that " a dog's hind limb will stand a tourniquet for two days if the leg is kept just above freezing-point and the leg will be undamaged if the dog's leg is kept ' nice and warm ' the usual stinking gangrene develops and the leg is lost "

The conclusion is obvious Tradition and modern science combine to urge that the frostbitten or chilled limb should be kept at a temperature just above freezing-point Against this might be brought the argument that it is absurd to continue those very conditions which have produced the disorder we are treating The answer is that we are doing nothing of the kind The patient has been spending hours or days in sodden clothing in an open boat or on an inhospitable mountain side His whole body has been chilled, his feet and hands are wet The general chilling has interfered with the physiological reactions to cold (Lewis 1931), the damp, by reason of its thermal conductivity, has augmented a local chilling which the low temperature alone could not have made so lethal The arterial constriction which was the first cause of his injury was produced by the passage of chilled blood through the thermal centre in the thalamus From the time of his rescue, conditions should be otherwise With his whole body at rest in a warm bed, the blood in the carotids will not be at a temperature low enough to excite the thermosensitive area The adrenal medulla will be unexcited by hypothalamic stimuli due either to cold or to emotional stress, and vasoconstriction will be slight or absent But the threatened tissues will be protected by their low temperature from the results of excessive metabolic activity

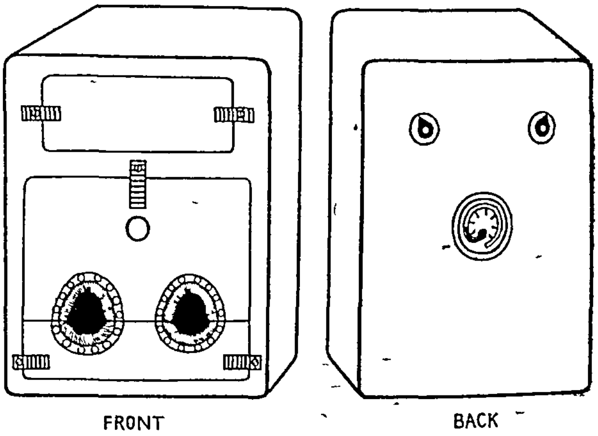
THERAPEUTIC REFRIGERATOR

During the winter of 1941–42, with the cooperation of Mr R J Simpson of the International Refrigerator Company, I designed an apparatus in which I hoped to test the practical truth of this theoretical argument It is shown in the figure

The cabinet consists of an upper and lower compartment In the upper is a metal tray in which solid carbon dioxide is placed The lower compartment opens sections and has two padded apertures for the feet It contains a thermometer which registers dial at the back of the cabinet Air circulates t two flues between the compartments These flues controlled by knobs at the back, by the manipulat which the desired temperature can be maintained operating instructions are as follows

1 Remove top half of front, place patient's feet in with sufficient cotton-wool or bandage round the ankles fill up the padded entrance holes when the cabinet front replaced If the cabinet is needed for only one limb, plug other hole completely with cotton wool or bandage to prevent leakage of air

2 Place two blocks of solid CO_2 refrigerant in tray in compartment—total weight 10–12 lb —each block inside separate canvas bag, the bag being well wrapped around it. To cool the cabinet quickly from room temperature place refrigerant in the tray unwrapped On the second filling, when the cabinet is cool, refrigerant can be economised by placing it in two bags or layers of canvas instead of one



3 See that both air-flues are open and watch carefully as temperature falls When desired temperature is reached close left hand knob (controls downward flue) When temperature rises open it slightly and find point of balance where constant temperature is maintained The right hand knob (controls upward flue) is only for use in emergency if temperature continues to fall and should normally be left fully open

4 When refrigerant has evaporated to 2–3 lb remove the bags and place it directly in the metal tray. If desired the cabinet can be run from the start with 2 or 3 lb of refrigerant placed directly in the tray, but this will necessitate re filling the tray about every six hours The cabinet uses 8–10 lb of refrigerant in 24 hours

It was my intention to test the efficacy of the treatment with the promised collaboration of the RAF Fortunately, I was denied this opportunity, and the apparatus is now described for the benefit of those whose opportunities may be greater In the first instance an attempt should be made to control the experiment by treating only one limb of those who are bilaterally afflicted

In the meantime, Webster, Woolhouse and Johnston (1942) have described their experiences with a method identical in theory but less convenient in practice Using ice-bags or dry cooling by means of a fan sprayed with iced water, they found that the constant burning with bouts of stabbing pain and pins and needles were relieved I have found the same in diabetic gangrene, but from this observation alone it cannot be said that the effect is specific However Webster and his colleagues found in addition that the swelling subsided and the blisters resorbed, and that in six cases of impending gangrene the normal pink colour returned in from 6 to 21 days

SUMMARY

In true frostbite, most of the affected tissue is doomed and no treatment can save it Some, however, is merely chilled and is in the same condition as is the whole affected tissue in immersion-foot and trench-foot The

THE LANCET

ONDON SATURDAY, DECEMBER 12, 1942

MEDICINE AND SOCIAL SECURITY

Sir WILLIAM BEVERIDGE in a report which has easily en the best seller of the week has set out to provide ery man with the feeling of security in his daily life ich is essential to full membership of human society, st as it is the biological requirement of the human fant The Ministry of Social Security which he roposes is like the Ministry of Food, directed to the tioning of the necessary things of life so that each is sured a proper share of them It is the consumer *ho is the* object of *ministerial care* , *the* producer *is* ot to be regimented except in so far as his activities re antisocial The elements of a healthy life are part f the make-up of social security, and medicine is the mplement of the healthy life It is one of the major sumptions of the Beveridge plan that there shall be omprehensive health and rehabilitation services for ll who need them The primary interest of the inistry of Social Security will be to find a service hich will diminish disease by prevention and cure , t will not be its rôle to define the working of such a ervice The medical service envisaged by the everidge report will be organised not by the ministry ncerned with social insurance but by departments sponsible for the health of the people Actually Beveridge's conception of the restoration of a sick erson to health as the primary duty of the state ncides with the objects of medical service as prosed by the BMA Medical Planning Commission here is no suggestion in the report of any regimentaon of medicine to this end The plan expresses no pinion on the terms of service and remuneration of ctors of various kinds, of dentists and of nurses, cept in so far as these terms may affect the possility of diminishing and controlling sickness and so ay affect the finances of the Social Insurance Fund The practice of medicine in the postwar world remains to be worked out by those who have been bred in its raditions the doctor-patient relationship remains nimpaired, but its efficacy is to be enhanced an undredfold by the abolition of the want and insecurty which have frustrated the practice of medicine as we have known it The doctor's prescription need no longer be a bottle of physic plus a pious aspiration , it can be addressed to the patient's whole personality When he says "be warmed and fed ' or 'keep an easy mind" or ' you need a change,' these injunctions will have lost their hollow ring It is true that he Beveridge plan expects contributory insurance or medical treatment to cover the whole population, not merely the 90% of the Medical Planning Commission Thus, no-one will be compelled to pay eparately for medical treatment, just as no-one is compelled to pay separately for education But this will not, of itself, put an end to private practice any more than it now does to private schooling And the same is true of provision for invalidity, retirement and dependants

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VITAMIN C NUTRITION

THERE are four ways of estimating the state of vitamin C nutrition—by a study of the diet, by laboratory tests such as the degree of ' saturation " by functional tests such as capillary fragility, and by clinical tests Examples of the first three types of investigation have lately appeared in these pages, and each has raised fundamental questions of interpretation MARRACK and his colleagues[1] estimated the vitamin in meals at British Restaurants and school canteens, and showed that unless green vegetables are included the amount may be only half the 30 mg widely accepted as the daily requirement Since in many instances very little more of the vitamin is consumed in other meals some degree of deficiency seemed likely At two public schools whose diet was investigated by WIDDOWSON and McCANCE and is reported on in this issue, the average daily intake of vitamin C had fallen from 33 and 34 mg before the war to 19 and 15 mg in spring, 1942 In one of the two schools neither green vegetables nor salad appeared on the menu during the week of investigation, and there was hardly any increase in potato consumption over the prewar figure , only 3 boys had any raw fruit The intake at the day-school was better—32 mg a day—because more potatoes and green vegetables were eaten A fairly accurate estimate of the vitamin C in the recent diet may be obtained by the saturation test It is known that people receiving 30 mg daily show a high excretion of the vitamin after one or two days of test dosing, that people with frank scurvy—i e , receiving very small amounts—respond only after about 7–10 days , and that intermediate responses are obtained when diets contain intermediate amounts of the vitamin MCNEE and REID,[2] using this method, have shown that the diet of some civilian engineers in the autumn and of both Royal Naval ratings and civilian engineers in the spring must have contained much less than 30 mg of the vitamin per day

The importance of the findings by these two methods depends on what one regards as the requirement of the vitamin The League of Nations commission put it at 30 mg daily , BACHARACH and DRUMMOND[3] say that 30 mg is the marginal ' requirement, and many American workers maintain that the optimal requirement is around 75 mg The argument is continually being put forward that the requirement must be lower than 30 mg , since a large number of people who consume much less than this amount are apparently in perfect health Attempts have therefore been made to develop tests which might detect early disturbance of function in such apparently healthy people For vitamin C the commonest functional test is that which measures the fragility of the capillaries GOTHLIN,[4] who first introduced this test, claimed that it was of great value in detecting mild cases of hypovitaminosis C, but different workers have obtained divergent results with it This is partly because of the different techniques used Capillary fragility is determined by applying to the arm either a positive or a negative pressure which will rupture weak capillaries and produce petechiæ, but neither the pressure nor the time of application is

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[1] Booth R G James G V Marrack, J R Payne, W W and Wokes F. *Lancet* 1942 ii 569

[2] McNee G Z L and Reid J *Ibid* p 538

[3] Bacharach A L and Drummond J C *Chem Ind* 1940 59 37

[4] Göthlin, G F *Skand Arch Physiol* 1931 61 225

Reviews of Books

Diabetic ABC War-time Supplement

(2nd ed) R D LAWRENCE, MD Aberd , FRCP London H K Lewis Pp 15 9*d*

THE efficient dietetic treatment of diabetics was no easy problem even in peace-time and its difficulty has increased with war-time food restrictions To many doctors and patients, however, the difficulty has seemed greater than it need special rations have been available for diabetics since the beginning of rationing, and if these are properly used diabetic diets of all varieties can be constructed In this small pamphlet Dr Lawrence with customary lucidity shows how this can be done, and in particular how patients who have been using the "line ration" scheme can adapt their dietetic prescriptions of peace-time to the food available in war He also gives much sensible advice about dealing with dangers due to disturbances of routine which nowadays all diabetics must be prepared to face In the interests of both personal and national economy he urges diabetics to change from single-strength insulin to the stronger solutions and to alter the amount of fluid injected accordingly , but desirable as this change is, it should be remembered that serious mistakes have been made, even by veteran patients, in measuring out the same dose of insulin from solutions of different strengths It would have been just as well to warn the patient to ask his doctor to show him how to make the necessary change

Sex-fulfilment in Marriage

E R GROVES, professor of sociology in the University of North Carolina , G H GROVES , C GROVES New York Emerson Books Inc Pp 319 $3

THIS book, despite a certain diffuseness, provides a popular and readable exposition of its subject It offers as the pooled and experienced wisdom of three intelligent people, that the giving out of love and integrity, consideration and understanding must be practised of necessity by both partners, all the time and in all circumstances, if sex is to be really enjoyed and fulfilled Sex is discussed as it affects men and women in health and in mental and physical sickness It is significant of the divorce between sex and birth in our minds at the present time that such a book should not discuss the optimal size of a family, nor the unaccepted truth that sex for a woman is not complete unless it results in childbirth It must be twenty years since Havelock Ellis published *Little Essays of Love and Virtue* (and why have we not had them reprinted as a Penguin ?) , like Ellis, the Groves aim at putting sex at our disposal as a good servant and friend of man but after twenty years it is still, unfortunately, as the good servant and friend of man acquisitive and individualist, and not of man the member of a family and community In common with *Parents Revolt*, by Richard and Kathleen Titmuss, this book recognises that " that by which men live the good life " is Tolstoyan and outgoing in essence, and not Nietzschean and grasping

Essentials of Occupational Diseases

J V REED, MD, FACS , A K. HARCOURT, MD London Baillière, Tindall and Cox Pp 225 25*s*

THIS book deals with the symptoms, diagnosis and treatment of occupational diseases but—strangely—gives no space to the question of prevention The outstanding feature of occupational or industrial diseases is that they can be prevented and even in the first textbook on the subject—Ramazzini's *De Morbis Artificum* published some 150 years ago—the preventive aspect was rightly stressed Reed and Harcourt write ostensibly for doctors who deal with compensation cases in America, where the law differs considerably from ours In the introduction they imply that health risks in a factory are investigated, not by physicians, but by chemists and industrial engineers , and add that information about health risks in a factory is " best obtained from the shop foreman " On the same analogy a works manager having trouble with his machines would do well to call in a doctor The authors lay no claim to originality, except for a few clinical observations of their own, but the sections on carbon-monoxide poisoning and on dermatitis are worthy of study they bear the imprint of much first-hand Some other sections do not show the same

The Premature Infant

Its Medical and Nursing Care JULIUS H HESS, EVELYN C LUNDEEN, RN , London and J B Lippincott Company Pp 309 21*s*

NO-ONE interested in infants can read this vol without being impressed by the wealth of helpful d compressed into it Dr Hess tells us that the mortal *rate in infants in the State of Illinois in* 1930 was while in 1940 it was 35 1 , in Chicago over the same pe it was reduced from 53 4 to 28 8 When we remem that in 1939 in England and Wales the infant mortal was 50, and that this year it is 59, we must feel grav dissatisfied with the state of affairs here His definit has been accepted in this country that " the premat infant is one whose weight at birth is below 5½ lb " traces the physiological development of the infant a gives useful tables of growth A premature infa station is described where the Hess heated bed a many other incubators are used He thinks nursi personnel at such a station should average one for eve 2 or 3 infants Masks, he considers, are of doubtf value ; in fact, he does not advise them for those nursi premature infants It is striking that he advocates very low intake of calories for instance, he suggests tha the average premature infant requires 36 calories per lb body weight Over here practical infant feeders an those accustomed to premature infants recommen 60–70 calories per lb He is careful not to comm himself in supporting lactogenic hormones as stimulant for breast milk, and seems to have little faith in them u to the moment The technique of breast and bottle feeding are faultlessly described Vitamins are giv their full due, and there is a good chapter on hæmorrhag in the newborn The last 90 pages deal with disease which may affect premature infants As an exhaustiv study of the subject the book will be serviceable to al those interested in lowering infant mortality

Pasteurisation of Milk

G S WILSON, MD Lond , FRCP, DPH, professor of bacteriology as applied to hygiene in the University of London at the London School of Hygiene and Tropical Medicine London Edward Arnold. Pp 212 18*s*

THE white paper on milk policy of 1937, with its proposals for a measure of compulsory pasteurisation, and the Milk Industry Bill of 1938 with clauses to implement such proposals, raised high hopes in the medical profession—hopes wrecked by the heavy opposition in the House of Commons At that time the Minister of Health could only plead for further education of public and parliamentary opinion These points are clearly brought out by Sir Wilson Jameson in his foreword to this book Professor Wilson has reviewed existing evidence about pasteurisation, and though most of the facts were accessible to those who really wanted them it is convenient to have all the evidence set out in one volume The exposition too is thorough and lucid The opponents of pasteurisation have concentrated their greatest objection to this process on the ground that, in ways which they have always hesitated to define, pasteurisation damages the nutritive qualities of milk In three detailed chapters the author gives the whole of the scientific evidence and experts will agree with his conclusion that " pasteurisation has no significant effect on lowering the total nutritive value of the milk for the growing animal " The only defect of the book is that too little space is given to the efficient control of the process of pasteurisation The phosphatase test is described and its efficiency indicated, but more might have been said about training supervisors and inspectors of milk plants, and the need for a high standard of supervision Professor Wilson makes good his claim that no-one who approaches this question with an open mind will have any doubt, after reading his book, that the need for pasteurisation is fully justified by the evidence For marshalling this evidence the public weal is greatly in his debt

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Major B W Rycroft, RAMC, has been appointed surgeon oculist to the King of the Hellenes and above the 1000 c cm needed to balance the normal daily output, and the amount needed to make up for vomiting or diarrhœa The adequacy of treatment must be controlled by daily weighings, for it is not possible always to measure the urinary output Dehydration must be relieved within a few hours, and in the infant with "d and v" the vomiting often ceases as soon as this has been done

YOUNG suggested that the fluid used to make up fluid loss should be "half-normal" saline (0 45% NaCl) containing 2½% glucose, and that subsequent fluid should be "one-fifth normal" saline (0 18% NaCl) containing 4% glucose , 300 c cm of the stronger solution should be given intravenously, accompanied by as much as is necessary of the weaker solution by the same route or by mouth Failing the skilled personnel to carry out the intravenous technique the solutions could be given by mouth YOUNG did not favour subcutaneous administration of fluid because it is only rarely that sufficient fluid can be got in by this route, and there is no control over the rate of absorption There seems to be no advantage in giving bicarbonate or lactate (Hartmann's solution) with the sodium chloride The infant body can select the proportions of sodium and chlorine it requires, provided that sufficient water is available for adequate renal excretion , this is borne out by adult experience, for neutral sodium chloride intravenously is equally effective in the alkalosis of pyloric stenosis and the acidosis of diabetic coma Among other speakers at the RSM meeting there was considerable support for subcutaneous saline, and it was suggested that saline by mouth was unpalatable to the infant and might lead to insufficient intake and in many cases vomiting But there was agreement that the relief of dehydration is an urgent matter, that "physiological" saline is not an appropriate fluid to use, and that it is necessary to work out precisely the minimum fluid requirements of the sick child, and to ensure that the proper amount is given, whatever route is selected It is not enough just to "set up a drip"

SCIATICA IN THE FORCES

IN the Services, where there is a special need for rapidity and accuracy in diagnosis and disposal, sciatica does not seem to be following clinical tradition Constant contact with the same patients—no longer free as civilians to seek another doctor—has disproved the legend that the disease is self-limiting and only occasionally recurrent , it shows a well-marked tendency to chronicity, giving rise to considerable wastage in hospitalisation and invaliding and offering an avenue for neurotic escapism Always demoralising in peace-time, it becomes doubly so under Service conditions , good men struggle to continue at their jobs but those of weaker fibre may end with an hysterical perpetuation of organic symptoms An Army bulletin[1] points out that sciatica no longer means a specific disease due to a true neuritis, but has come to indicate a syndrome of postcrural pain of many possible origins Early diagnosis and treatment are of cardinal importance , patients should be admitted to hospital for anything more than a minor attack, and thorough examination carried out This should include a careful record of the nature of the pain, its mode of production and relation to injury or occupation, of any changes in sensation, muscle-power or reflexes in the legs, and of the function of the lumbosacral spine Accessory investigations include radiograms of lumbar spine and pelvis, lumbar puncture, and (for soldiers are not immune from malignant pelvic disease) rectal examination Myelography with iodised oil or air should not be done except under a neurologist's advice Not least in importance is an assessment of emotional state and resistance to pain Among the common causes, fibrositis of the fasciæ, muscles, ligaments or joint-capsules in the lumbosacral, gluteal and hip regions is often associated with trauma, postural strain and congenital bony anomalies rather than focal sepsis The pain is referred from the more deeply situated lesions which may require location with an exploring needle, and KELLGREN[2] has found 70% of cases to originate in this way These respond to the familiar technique of local injection with procaine,[3] in which the criteria of an immediate aggravation of the pain followed by permanent or semi-permanent relief must be satisfied if the diagnosis is to be confirmed Where the lesion is inaccessible to the needle manipulation may succeed With sciatica of fibrositic origin there should be no disturbances of sensation or tendon-reflexes in the legs , these, if present, are symptomatic of a neuritis or radiculitis, or of a prolapsed intervertebral disc In the former, recently under fire as an entity but championed by this bulletin, an acute onset of often severe pain is associated with tenderness of the nerve and hamstrings, slight sensory impairment, occasional weakness in dorsiflexion of the foot and a diminished or absent ankle-jerk The cerebrospinal fluid, normal in a neuritis, may in radiculitis contain an excess of protein and lymphocytes A chronic neuritis may respond to the perineural injection of procaine, but the use of oxygen here or subcutaneously is not devoid of risk , radiculitis may be relieved by epidural injections of procaine followed by normal saline

With prolapsed intervertebral disc, which SYMONDS[4] regards as by far the commonest cause of sciatica in Service cases, trauma is of ætiological significance, but may be entirely absent and should not be regarded as essential in the history The common story is of back strain while stooping, followed fairly soon by low back pain, and, perhaps weeks later, by sciatic pain worse on exertion or coughing Scoliosis, tenderness of the nerve and of the hamstrings and calf-muscles, weakness of the plantar and dorsiflexors of the foot, and a diminished or absent ankle-jerk are common physical signs Sensory changes are usual in the form of hypæsthesia on the outer side of the leg below the knee and on one or other border of the foot, with loss of postural sensation in the corresponding toes Occasionally there is bilateral pain and sphincter disorder, but this cauda equina syndrome more usually follows the unwise manipulation of a case of disc prolapse, or, as a florid progress of symptoms and signs, is due to the rarer causes of gross spinal disease, pelvic tumours and tumours of the cauda itself Once the diagnosis of prolapsed disc is made—and this is largely on clinical grounds alone, for plain radiograms are unhelpful, air-myelography standardised McNEE and REID, using both a positive and a negative pressure method, could find no correlation between capillary fragility and degree of saturation Using the positive pressure method they also found no increased fragility in four out of five cases of frank scurvy The question of technique has been examined by BELL and his co-workers,[5] who found little correlation between a positive pressure method[6] and a negative pressure method[7] Moreover SCARBOROUGH[8] has adduced evidence that deficiency of vitamin P plays a part in making capillaries more fragile It is clear that assessments of nutritional level in vitamin C by means of tests for capillary fragility must be interpreted with caution

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[1] *Army med Depart Bull* no 16 November 1942

[2] Kellgren, J H *Lancet* 1941 i 561

[3] Good, M G *Ibid* 1942 ii 597

[4] Symonds, C P *Proc R Soc Med* 1942 35, 511

The last type of evidence for the detection of a deficiency—clinical tests—would include the recognition of early signs of deficiency and of improvements in health after increasing the vitamin intake Early signs of vitamin-C deficiency are vague and certainly not pathognomonic Recording the effect of increasing the intake—the therapeutic test—requires intensive and well-controlled experimental observation Where reliable tests of this sort have been carried out, the evidence of mild malnutrition seems fairly conclusive—for example, the report from Germany[9] of the increased height and weight and improved health of school-children, and the paper of GLAZEBROOK and THOMSON[10] on the reduced incidence of pneumonia and rheumatic fever, both resulting from an addition of vitamin C to an ordinary diet, suggest that the symptomless deficiency indicated by studies of diet and by the saturation test is real

DEHYDRATION IN INFANTS

AN understanding of the differences in renal mechanism between adult and infant—differences which are exaggerated in the premature infant—is essential if infants suffering from dehydrating disease such as gastro-enteritis are to be given the best chance of recovery Present knowledge of this subject, and its application to therapy, was summarised at the therapeutics section of the Royal Society of Medicine on Nov 10 by W F YOUNG The normal newborn infant's body contains 80% by weight of water, against 72% in the adult, and in the infant a much larger proportion of that water is extracellular than in the adult For its weight the infant's fluid requirements are far greater than those of the adult, the daily requirement of a newborn infant being some 150 c cm per kg, against 50 c cm per kg for the adult With McCANCE[11] and HALLUM,[12] YOUNG has demonstrated that the glomerular filtration rate and urea clearance per sq m of body surface is much lower in infants, especially the premature, than in adults, in short-time experiments they were found to vary with the urinary output The electrolyte clearances, particularly of sodium and chlorine, were also much lower than in adult life GORDON, HARRISON and McNAMARA,[13] in New York, have confirmed these results, but using a 24-hour observation they noted less variation in the clearances as minute volume of urine secreted was varied presence of high columnar epithelium in the infant glomerular tuft, demonstrated by GRUENWALD POPPER[14] may explain these differences adult and infant

The practical significance of these findings is obvious Of the normal water intake at any age only about is available for renal excretion, the remainder being lost through the lungs, as insensible perspiration, and in the fæces Owing to its larger surface, although the infant's intake per unit of body-weight is much greater than the adult's, the amount of water lost by extrarenal routes is roughly the same; hence, if the extrarenal losses are increased by fever, hyperpnœa, vomiting or diarrhœa, the water available for the kidneys may readily be reduced to the danger point The adult kidney compensates for low urinary volume by greater concentration of solids in what water is available, the infant kidney is unable to do this in the same degree, so that as soon as the urinary output falls the normal chemical composition of the body fluids is no longer maintained The blood urea rises rapidly, to diminish again as quickly if dehydration is removed Similarly, since the infant kidney is *not efficient at concentrating* salts, it is easy, as ALDRIDGE[15] has shown, to produce œdema with high blood sodium and chlorine if saline injections are given to relieve dehydration So sensitive indeed is the infant to excess salt that œdema may be produced by change of diet from human milk to cow's milk, by reason of its greater salt content What is important in this recent work is the demonstration that the happenings in the infantile renal mechanism accompanying dehydration are not, as was previously thought, evidence of renal abnormality but are simply due to too little water available for excretion The explanation indicates *at once the main* lines of treatment Enough water must be given to replace what has been lost, and in addition enough to enable the kidneys to function efficiently, this means an intake greater than normal, to compensate increased extra renal losses The lost salt must also be replaced, with due regard to the risk of salt poisoning In the infant the gastro-intestinal secretions are either iso or hypo tonic, so the salt lost is certainly not more than the amount corresponding to the water lost. Administration of physiological saline may be safe and valuable in adults, although in them there is a certain risk of poisoning from *too much* salt, *in infants it is a dangerous drug* Remembering that at best only half the water taken is available for renal excretion, and that the infant kidney can rarely secrete urine containing more than 1·4% of salt, it is obvious that 0 85% saline may rapidly lead to serious salt poisoning Treatment cannot be regulated by biochemical findings, for at best the estimation of sodium and chlorine takes some hours It has been found, however, that mild dehydration means a loss of about 4% of the body fluid and severe dehydration one of about 8%, and these figures can be used as a basis for initiating therapy Taking an infant of 15 lb (7 kg) normal weight, and assuming a loss of 6%, some 300 c cm of fluid is required merely to relieve dehydration over nstitutional disturbance They are irreversible as e the very similar changes seen in severe vitamin-A ficiency, where normal mucosa does not reappear even en the deficiency is made good Yet nasal mucous embrane is known to possess considerable powers of generation to normality—for example, after erosion e to acute infection or deliberate operative removal his may be because squamous epithelium is usually e end-result of epithelial differentiation and once rmed shows no tendency to revert to another type, ssibly because the essential reason for the changes is ntinuously operating Thus, from what is known of the tural history of atrophic rhinitis in the last fifty years d the pathology, an obscure defect of metabolism is e most likely cause

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[5] Bell, G H, Munro, H N, Lazarus, S and Scarborough, H, *Lancet*, 1942 ii, 536
[6] Bell, G H, Lazarus, S and Munro, H N *Ibid*, 1940, ii, 155
[7] Scarborough, H *Edin med J* 1941, 48, 555
[8] Scarborough, H *Biochem J* 1939, 33, 1400, *Lancet*, 1940, ii, 644
[9] *Bull War Med* 1941, 2, 5
[10] Glazebrook, A J and Thomson, S *J Hyg Camb* 1942 42, 1
[11] McCance, R A and Young W F *J Physiol* 1941, 99, 265, *Arch Dis Childh* 1942, 17, 65
[12] Young W F, Hallum, J L and McCance, R A *Arch Dis Childh* 1941, 16, 243
[13] Gordon, H A, Harrison, H E and McNamara, H *J clin Invest* 1942, 21, 499
[14] Gruenwald, P and Popper, H *J Urol* 1940, 43, 452
[15] Aldridge, A G V *Arch Dis Childh* 1941, 16, 81, 182

A speculative belief of the ancients in a naso genital lationship, revived by Mackenzie,[4] has recently reived some scientific approval Mortimer, Collip and hers[5] observed that reddening and swelling (or swelling one) of the middle and inferior turbinals followed ypodermic injection of the œstrogenic hormone in the acacus The hormone made up in oil was then given tranasally to patients suffering from atrophic rhinitis, nd a clinical improvement was recorded The method as adopted by many other workers with more or less ccess and some publicity Hall and MacLeod[6] report n 23 cases treated by intranasal spraying with œstrin in l and conclude that relief is given to all patients some eing cured Objective recognition and measurement is ot easy but an attempt was made by Eagle Baker and amblen[7] who examined sections of nasal mucous membrane removed before and after the course of treatment They observed 22 cases but biopsy specimens ere taken from only 14 They found that although ubjective clinical improvement occurred in nearly all ases and the mucous membrane appeared smoother and ore hyperæmic and fewer crusts were present, yet no hanges could be demonstrated microscopically Thus he only objective test was negative A feature common o all these papers is the insistence on careful intranasal leansing before applying the oil, and this is deemed to be f such importance that it is occasionally performed by he surgeon himself That regular removal of crusts and nremitting intranasal hygiene gradually result in linical improvement must be remembered in considering the validity of any deductions Although crystalline progesterone is absorbed by the uterine lining membrane, there is no proof that œstrogenic substances are absorbed through normal nasal mucosa, much less through a mucous membrane largely composed of stratified squamous epithelium This proof, and a series controlled by cases treated with the same cleansing measures but no hormone, checked by biopsy examinations, would be helpful in deciding whether the therapeutic claims are justified

ANXIETY IN CHILDHOOD

THE psychiatrist, the pædiatrician and the educator, Dr B I Beverly remarks,[8] who went their several ways twenty years ago, now find themselves exploring the common ground of two basic principles. that anxiety in adults is largely a renewal of the anxiety of adolescence, which in turn is an expansion of anxieties in the first three years of life, and that the greatest hope for better health lies in prophylaxis Extreme anxiety states, once believed to be rare in children, are actually he thinks not uncommon, he has seen 10 cases in 2 years, and gives typical case-histories These, as he says, are monotonously alike, of the 9 cases quoted 7 were girls, except for one girl of 17 the whole group were aged over 10 years and under 13 They were of normal intelligence and they nearly all suffered from bouts of panic in which they would cry, fancy someone or something was coming after them, and complain of nausea or abdominal pain Often an alarming experience—such as death of a friend or a friend's mother—had preceded the first of the bouts of panic In nearly every case one or both parents resented the child, or one parent was unduly apprehensive and fussy Nearly all had been strictly managed in infancy by a parent who had determined that they should achieve some impossible criterion of polite behaviour, and the parents had won, for they were all too good and well behaved to be normal Because they could feel no security in their parents, they resented this treatment secretly, hate of the oppressive parent filled them with feelings of guilt, and fear of their own guilty hate found expression in somatic symptoms through stimulation of the sympathetic nervous system Dr Beverly's treatment consisted in gaining their confidence until they could speak of their resentment and then getting them to realise that other people felt the same towards their parents, and that they were not going to be punished for it This line was usually successful, as success in psychotherapy goes, thus he says of one patient "She began to fight more with her brother and talked back to her parents the way a normal child should" But he believes that these patients will never entirely recover The harm done by insecurity during infancy cannot be cured they will always be easily frightened While extreme reactions are unusual, milder forms of the condition, provoked by similar environmental factors are seen every day They could be prevented The last case he quotes is that of a child of 4 months whose mother believes children should not be spoiled, she also does not like babies and does not "feel right" about her own, at the same time, to smother her own guilt, she exaggerates the importance of all trivial matters to do with the baby Cases of the kind, he feels with justice, place a great responsibility on the pædiatrician; if he fails presumably the responsiblity, like the baby, is handed on in turn to the educator and the psychiatrist

WORKSHOPS FOR THE TUBERCULOUS

THE danger of giving people protected jobs, so Dr Herman Biggs held some years ago, is that you may turn a sick self-respecting workman into a healthy loafer Mr Edward Hochhauser, president of the Altro Workshops, a voluntary enterprise for the rehabilitation of tuberculous patients in New York, feels sure, however, that the sheltered workshop has a part—though a limited one—to play in aftercare[1] These workshops are a unique experiment in that they not only tide a man over the gap between his discharge from sanatorium and his return to industry, but prepare him during that time to work successfully in a competitive world A study made by the workshops five years ago shows that though most employers will take back one of their own men who has developed tuberculosis, only about 40% are willing to employ a new applicant who has it Many of those who took tuberculous workers back made special conditions of work for them, thus one company employing 19,000 workers provided a complete medical service for them, and insisted that their 200 tuberculous employees should only work part-time until recovery was achieved Another company was able to provide such favourable conditions for tuberculous workers that their average attendance record was better than that for the whole group of employees Mr Hochhauser finds that the possibility of a job with his old employer is good therapy for a patient in a sanatorium and—provided his job depends on recovery—ensures adequate stay, disability pensions which have no reference to rehabilitation or employment put a premium on invalidism and are unsound unreliable and the iodised oil now available too irritant—the Army patient should as a rule be invalided even if he recovers, recurrence is frequent, and operation should be reserved for key-men who can be kept on in sedentary employment From experience in the RAF, **Symonds** agrees that diagnosis should be made without the use of contrast media, and, though he advises a trial of long immobilisation, he has found operation so unsuccessful in getting men back go duty that he would invalid the patient if immobilisation fails

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[4] Mackenzie, J N *Amer J med Sci* 1884 87 360

[5] *Proc Soc exp Biol N Y* 1936 34 535, *Canad med Ass J* 1936 35, 503 615 · 1937, 37 445

[6] Hall I S and MacLeod L A M *J Laryngol* 1942 57 337

[7] Eagle, W W Baker R D and Hamblen E C *Arch Otolaryng Chicago* 1939 30 319

[8] *Amer J Dis Child* 1942, 64 585

[1] *Hospitals*, July, 1942

Whatever the cause of the pain, symptomatic treatment in the first attack will consist of rest in bed and analgesics, with local heat Complete rest from the outset until the pain has gone should replace perseverance with ambulatory treatment, which may encourage chronicity In all cases, attention to morale is of the greatest importance, diversional therapy during the early confinement to bed and more constructive work later will help to prevent the psychoneurotic accentuation and perpetuation of symptoms Ways of achieving this end have been suggested by **Jefferson**,[5] and success in avoiding these complications may seem some compensation for the not infrequent failure of physical therapeutics

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Annotations

CLINICS FOR WOMEN'S AILMENTS

Treatment of venereal diseases in the Forces is intensive and efficient, but the British Social Hygiene Council believe that facilities are not adequate for treatment of civilians, especially women, seafarers and industrial workers in rural areas Their plea to local authorities, first published in 1940, asked for an educational campaign among women on the lines that neglect of any female ailment—any discharge or pain, for example—might have serious consequences, and perhaps interfere with a healthy family life As a complement to such teaching, they consider that clinics for treatment of ailments of women should be set up, offering free diagnosis and, when necessary, treatment Such clinics would be staffed by doctors experienced in both gynæcology and venereal disease, and since they would treat both types of case no stigma would attach to patients attending The gynæcological work of the clinic could be financed under the maternity and child welfare provisions made by the Ministry of Health. The Government has undertaken to contribute 75% of the cost of any extra treatment facilities made necessary by war conditions, unfortunately there is at present a ruling that ailments of women clinics and VD almoners cannot rank for the 75% grant The council contend that this ruling should be reversed, and indeed suggest that the cost of new facilities made necessary by an influx of new population into an area should be borne entirely by the Government, local authorities not being asked to meet new charges in what is really a national emergency

The present position, as set out by the council in a note to Members of Parliament entitled *33B and the V D Situation* (from Tavistock House, W C 1) is that 70,000 new cases of venereal disease were reported from civilian clinics last year, and that the figures of incidence have risen to the level reported in 1932 Men at the peak age of infection (19–23) in the Forces are effectively treated, but there are no special provisions for treating men of the Merchant Navy as there are for the fighting services, and in many of the small ports now being more used facilities for treatment are inadequate Wives and partners of men in the Services or Merchant Navy are scattered in war industries throughout the country, would probably seek confidential treatment volun if it were available conveniently and without social st Were civil clinics meeting the needs of women they wo now be treating more women than men, but the rev is the case Transport difficulties and industrial dispe deter infected people from attending, moreover clinic hours often coincide with working time, and wome especially will not ask for time off to attend because o the necessity of explaining to employers Most clinic have no follow-up service, and in many places loca administration nullifies the regulations for repayment o fares to patients Almoners have been extremel successful in persuading contacts to accept voluntar treatment, and if ailments of women clinics are set up th council consider that men and women should b appointed to the medical officer's staff to advise and hel patients and seek out contacts

Defence Regulation 33B, which makes it possible t compel people to come for treatment if they are name as the source of infection by two patients,[1] is now unde discussion in the House on a prayer to the Governmen for its revocation The council would like to see i replaced by a new regulation giving similar powers o compulsion, but ensuring also that proper facilities fo voluntary treatment would be provided These woul include not only clinics organised and staffed as suggested, but opportunities for short intensive course of treatment in hospital, and arrangement of clinic hour to suit the convenience of patients in jobs The suggest, too, that as a war measure the Wasserman reaction of all pregnant women should be done

ATROPHIC RHINITIS AND THE ŒSTROGENIC HORMONE

Within the memory of older practitioners certai diseases have almost disappeared and others have becom rarer The anæmia of female adolescence—chlorosis—is a striking example of the former, and atrophic rhiniti of the latter These two diseases have several othe common features both mainly affect females, patient first come under observation in adolescence, and the bul of them are from the poorer classes, improved hygien and sanitation, changes in diet and more outdoor exercis are all believed to play some part in their gradual disappearance There is no precise knowledge of the ætiology of atrophic rhinitis, but even strong advocate of other theories, Cullom,[2] for instance, admit tha nutrition is an important factor, and a study of th pathology lends additional support to this view Th morbid anatomy of atrophic rhinitis has been classicall described by Wyatt Wingrave[3] As its name indicates the changes are those of atrophy or degeneration Th subepithelial tissues become broken up by increase in fibrosis The mucous glands atrophy, possibly because of a resulting impairment of their nutrition, and hyalinisation and pigmentation follow The epithelial basement membrane breaks up and disappears, and the epithelium itself changes from a ciliated pseudostratified columnar to a stratified squamous type In other words, the pattern of the whole mucous membrane alters from one of activity to that of inactivity The function of the respiratory mucous membrane is to secrete mucus, which it then moves into the nasopharynx as an unbroken sheet by means of its cilia The mucus warms inspired air and also traps and acts upon foreign matter The changes described are followed by a scantier secretion of more watery mucus and a discontinuity of the mucus sheet in areas where the cilia have disappeared These stationary masses of mucus dry and form the crusts characteristic of the disease It is remarkable that such drastic local changes are not accompanied by any apparent

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[5] Jefferson G *Ibid*, p 295

[1] See *Lancet*, Nov 14, p 589

[2] Cullom, M M *J Amer med Ass* 1941 117, 987

[3] *J Laryngol* 1894 8 96

GENERAL MEDICAL COUNCIL

WINTER SESSION NOV 24–28, 1942

AT the conclusion of the President's address, reported in our issue of Nov 28 (p 653), the council ratified the appointment of Prof J A Nixon, Mr H Collinson and Sir William Fletcher Shaw to inspect the qualifying examinations to which students are being admitted earlier as an emergency measure

Under the temporary provision order Dr E A Gregg was appointed to the vacancy on the council, left by the death of Sir Henry Brackenbury, as direct representative for England

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The council then considered five postponed charges of drunkenness and one of indecent assault, and made no erasure They erased the name of *Christopher Bastible,* MD NUI, against whom a further conviction had been recorded in August, 1942 of being drunk and incapable and failing to surrender to bail

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The case of *Ali Ahmed Hoda*, registered as of c/o Barclays Bank, Forest Road Branch Walthamstow London, E 17, MB Bombay (1920), who had been summoned to appear before the council on the following charges

In the Case of C D That being a registered medical practitioner

1 You gave the following certificate in your professional capacity for subsequent use for administrative purposes under the National Service (Armed Forces) Act, 1939 —

266, Forest Road, Walthamstow, E 17, 23/5/40

This is to certify that Mr C D of is in my opinion suffering from Epilepsy He has been under my care for the same for the last about 10 years Although I have not seen him in actual fit, I have on several occasions attended him after these attacks and once for injuries resulting by falling on the face during a fit about 2 years ago He was examined by Dr L R Yealland, MD, FRCP, of 136, Harley St, whose Diagnosis of the case is the same as mine

A Hoda, MB

C D

Witness to the above signature A Hoda, MB

2 You stated in the said certificate given by you on May 23, 1940 that the said C D was in your opinion suffering from epilepsy, and that he had been under your care for the said condition for a period of ten years before that date whereas in fact he had not been under your care for the said condition or alleged condition for any such period or at all

3 You did not make any or any proper professional inquiries before you gave the said certificate

4 The certificate given by you in the case of the said C D was untrue misleading or improper within the meaning of paragraph 1 of the Warning Notice issued by the General Medical Council dated June 1933

5 You gave the said certificate for the purpose of enabling the said C D who was to your knowledge a person who might become liable under the National Service (Armed Forces) Act, 1939 to be called up for service, to evade any liabilities which he might become liable to discharge under or by virtue of the Act

6 You conspired with the said C D and with other persons for the purpose of enabling the said C D to evade his liabilities under the National Service (Armed Forces) Act 1939

7 You aided, abetted, counselled or procured the said C D to produce in himself an apparent disability, and thereby to affect his apparent suitability for service in the Armed Forces of the Crown, by instructing him, or causing him to be instructed in or about April, 1940, how to simulate the symptoms of epilepsy for the purposes of an examination by a registered medical practitioner engaged in special practice to whom you had referred him

And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect

In the Case of I J That being a registered medical practitioner

1 You gave the following certificate in your professional capacity for subsequent use for administrative purposes under the National Service (Armed Forces) Act, 1939 —

266, Forest Road, Walthamstow, E 17, 15/6/40

The Chairman, Army Medical Board

Dear Sir,—Mr I J of is suffering from Grande Mal He has been under my care for some considerable time He is at present receiving treatment as directed by Dr Browning Alexander of 42, Harley Street, W 1

Yours faithfully

A Hoda, MB

2 You stated in the said certificate given by you on June 15, 1940 that the said I J was suffering from Grande Mal and that he had been under your care for some considerable time, and thereby implied that you had attended or treated him for the said time for the said condition, whereas in fact you had not attended or treated him for any such condition or alleged condition for any such time or at all before February or March, 1940 when you had only seen him on one occasion with reference to the said condition or alleged condition

3 You did not make any or any proper professional inquiries before you gave the said certificate

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6 You conspired with the said I J and with other persons for the purpose of enabling the said I J to evade his liabilities under the National Service (Armed Forces) Act, 1939

And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect

The complainants were the Ministry of Labour and National Service, represented by Mr Gerald Howard counsel, instructed by the council's solicitors, Messrs Waterhouse & Co Respondent was represented by Mr P Sandlands, KC, and Mr T F Davis, instructed by Messrs Bulcraig & Davis (Three other similar charges were printed, but no evidence was offered in support of them)

C D testified that he had suffered from fainting fits, but he had never heard them called epilepsy, Dr Hoda had not used the word to him He did not know what was in the certificate which he had handed to the medical board He had been put in grade 4 Later on, he had been seen by another medical board which put him in grade 2 He had been a patient of Dr Hoda for some ten years He did not know what his fainting fits were due to, they were few and far between He had told Dr Yealland the truth about them, and Dr Yealland had examined him at length He admitted signing his name on the medical certificate given him by Dr Hoda, but maintained that he had not read what was on it

G H, in respect of whom similar charges had been proffered, said that he had seen Dr Hoda in 1938. He had never had fits, but had lapses of memory and varicose veins He had asked for a certificate Nothing had been said about epilepsy.

(Mr Howard, after hearing this evidence, withdrew the charge in this case)

I J, an officer, said he had had fits nine or ten years ago, but no recurrence of that type He had fainted since then from time to time He had wanted to avoid military service and had rather exaggerated his symptoms He had paid money to a man called Lipschitz through a third party and Lipschitz had accompanied him to Dr Hoda, Lipschitz had coached him in his answers to the doctor He was put in grade 4 by his medical board in June, 1940 After questioning by the police he voluntarily submitted himself to another examination

Dr Hoda gave evidence on his own behalf, and maintained that he had told C D that he had epilepsy when he became of an age to be told, and that he had treated him with bromides and phenobarbitone He had said he would like a second opinion when C D asked for a certificate, and the consultant had confirmed his diagnosis C D's parents had frequently described the fits to him, and how C D had cut his head when unconscious He did not keep records of cash payments

Mr Sandlands pointed out that his client was charged with two statutory crimes, trumped up under the phrase "infamous conduct"; and emphasised the difference between the council's procedure and that of the criminal courts He argued that the council was not a suitable tribunal to judge crime The only evidence against his client was that of an accomplice He put in testimonials and asked why the police had not prosecuted when they made inquiries in July, 1940.

The council did not find the charges proved

TWO ERASURES FOR IMPROPER CERTIFICATION

The case of *Louis Aimee Newton* registered as of the Elms, Stanley Road, Teddington, MRCS (1928) who had been summoned to appear before the council on the following charges

In the Case of A B That being a registered medical practitioner

1 You gave the following certificate in your professional capacity for subsequent use for administrative purposes under the National Service (Armed Forces) Act 1939 —

The Elms, Stanley Road, Teddington, 23/3/40

This is to certify that I have attended A B of for the past six months during which time he has had attacks of fainting which are epileptic in character He loses consciousness and does not remember anything about them He has been on luminal gr 1 tre die for the past five months

L A Newton, MRCS

2 You stated in the said certificate given by you on March 23, 1940 that you had attended the said A B for a period of six months before that date, whereas in fact you had not attended him for any such period, or at all before March, 1940

3 You did not make any or any proper professional inquiries before you gave the said certificate

At present in America there is a good chance of getting the tuberculous worker employed after treatment, but there, as here, the gap between leaving the sanatorium and entering full work is a period of dangerous privation for many Those with limited or uncertain work tolerance, and those with advanced disease of doubtful prognosis need, he believes, a hardening centre or a sheltered workshop or colony The sheltered workshop should undertake the medical, social, psychiatric and economic care of the patient and his family, it is not enough to provide part-time work with rest facilities if the patient then goes to an insanitary and overcrowded home with insufficient income The workshop aims at his physical, psychological and social readjustment and at preventing relapses Materials made in the workshop are sold competitively and patients are paid at prevailing union rates for work done This is possible because over a period of years the Altro Workshops have built up a monopoly for some types of goods Thus they manufacture hospital uniforms with the trade name of 'Sterigarm,' and have cornered the market for this merchandise Relative monopolies of the kind form the basis of all successful rehabilitation centres which aim at paying a full wage Over here Papworth is famous for its trunks and portable buildings, and Preston Hall for portable buildings and printing

In New York state a patient must present a doctor's report that he is fit for 7–8 hours work daily before he can take a trade training At the State Rehabilitation Bureau an experiment has been begun under which suitable sanatorium patients can start vocational training if they have a 4–6 hour work tolerance and if the prognosis for full-time work falls within the time necessary to complete the course, and there are hopes that this plan will become accepted policy. As it is, patients have to be kept for 2–4 months longer than need be in sanatorium or sheltered workshops before they train for a trade, or else their trade training must be paid for out of private funds, which means that only a limited number of them get trained The sheltered workshops, Mr Hochhauser believes, should serve primarily those who need a modified environment for from 6 months to 3 years, but should also have room for a small group needing permanent sheltered employment The Altro Workshop has run for 27 years, at first only early cases were accepted, but of late years about 90% are moderately advanced cases and 10% are patients needing permanent care Results have been good with cases that become stabilised, and satisfactory with the unstable group, many of whom have been graded up to a full day's work and have continued to work for 10–25 years afterwards, and some admitted as permanent sheltered workers have later passed out into industry In 1915 there was room in the workshop for 22 patients, nowadays it takes 156 with 10 ex-patients The present premises, built in 1925, were planned so that another floor can be added and the capacity increased by 60 or more Not all patients discharged from sanatorium need a sheltered workshop, and graduated work in industry under intelligent supervision has advantages which, as he pointed out, a philanthropic enterprise lacks But for some patients the workshop provides just the bridge between sanatorium treatment and full work which they need

THE MAKING OF PHYSICISTS

ABSTRACT though it is, physics is more closely bound up with practical life and with industry than most of its fellow sciences The symbiosis could be even more productive if we made a few adjustments in our methods of training and distributing physicists, as Sir Lawrence Bragg has pointed out[1] He thinks we are not bad, on the whole, at producing the men for the job Our students are not equipped with the knowledge, mathematical ability, power of philosophic generalisation industry possessed by, say, the German student of the type, but they have a compensating horse sense w enables them to hold their own, and we rear about of them per million population every year They almost entirely from the grammar and secondary sch Our system of a continuous course through sch and university gives boys, he thinks, too unbro a concentration on the acquisition of knowledge a not enough practice in using their hands He examined honours students who could write a g answer on the structure of the atom but could not sold two wires together, and he finds American studen thanks to the experience of manual work which th commonly acquire in their long vacation, "more practic handy and bold at setting up apparatus" He suggests that English honours students should work for months in a laboratory of some industrial concern at apprentice's wage between leaving school and ente the university, so that they start the course with at least the knowledge of a lab boy Then we make the student's career depend too much on answering examinatio questions rather than on "grasp of principles, initiative, cleverness of manipulation and vitality" These qualities could be encouraged, Bragg suggests, by inviti industrial technical workers to give special courses in the universities, such experts would then have a chance to add their counsel when policy is discussed

Physical research, Bragg believes, is on the whole better conducted in a university than in an institution set aside for research and nothing else The constant flow of young men, bringing fresh minds and original ideas to bear on the work in progress, and the intercourse with men doing widely different work, as well as the demands of teaching, help to keep the university physicist from the dangers of stasis Purely research institutions should be regarded not as a body of men but as a body of equipment to which firms could send men to develop some good idea over a year or more A body of men working at research alone along some suggested line lack both the incentive of free chase after any fascinating scent which keeps the university researcher on his toes, and the calls of his industry which move the industrial physicist They are working in a vacuum and they get stale No one can say "I will have a good idea this morning" Ideas choose their own moment, but they can be stifled by administration and routine An organisation which spends the nation's money on research is apt to require the worker to account for every moment of his time and to indent for every new piece of apparatus But a man with a new idea should start work instantly while it is still red hot; he needs plenty of old junk at hand to make his rough models, and the liberty to buy other odd bits of equipment as he needs them In the long run it is more economical to give him this freedom By all means let him do things "through the proper channels" —but let the channels be direct and open

Jewish National Library—It is now fifty years since the Jewish national library was established in the Jewish University at Jerusalem Professor Weil, director of the library, in his broadcast on the occasion of the jubilee, said that one of the most enthusiastic contributors to it had been the Russian physician Chazanowitz, for many years he collected volumes for the library, for which the present building on Mount Scopus was afterwards erected In 1900 there were 15,000 volumes in it, now there are 440,000 Every resident in Palestine can use it, and during 1941 64,000 readers were enrolled For the benefit of doctors six medical branches are maintained in different parts of Palestine, this medical section has been built up by the committee of American-Jewish physicians The library-staff hope to ensure in the future that every important publication in the world on Jews and Judaism shall find its way to Mount Scopus

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[1] Physicists After the War Reprint of a lecture to the Royal Institute of Great Britain

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And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect

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The Chairman, Army Medical Board

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Yours faithfully,

A Hoda, MB

2 You stated in the said certificate given by you on June 15, 1940, that the said I J was suffering from Grande Mal, and that he had been under your care for some considerable time, and thereby implied that you had attended or treated him for the said time for the said condition whereas in fact you had not attended or treated him for any such condition or alleged condition for any such time or at all before February or March, 1940, when you had only seen him on one occasion with reference to the said condition or alleged condition

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And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect

The complainants were the Ministry of Labour and National Service, represented by Mr Gerald Howard, counsel, instructed by the council's solicitors, Messrs Waterhouse & Co Respondent was represented by Mr P Sandlands, KC, and Mr T F Davis, instructed by Messrs Bulcraig & Davis (Three other similar charges were printed, but no evidence was offered in support of them)

C D testified that he had suffered from fainting fits, but he had never heard them called epilepsy, Dr Hoda had not used the word to him He did not know what was in the certificate which he had handed to the medical board He had been put in grade 4 Later on, he had been seen by another medical board which put him in grade 2 He had been a patient of Dr Hoda for some ten years He did not know what his fainting fits were due to, they were few and far between He had told Dr Yealland the truth about them, and Dr Yealland had examined him at length He admitted signing his name on the medical certificate given him by Dr Hoda, but maintained that he had not read what was on it

G H, in respect of whom similar charges had been proffered, said that he had seen Dr Hoda in 1938 He had never had fits, but had lapses of memory and varicose veins He had asked for a certificate Nothing had been said about epilepsy

(Mr Howard, after hearing this evidence, withdrew the charge in this case)

I J, an officer, said he had had fits nine or ten years ago, but no recurrence of that type He had fainted since then from time to time He had wanted to avoid military service and had rather exaggerated his symptoms He had paid money to a man called Lipschitz through a third party and Lipschitz had accompanied him to Dr Hoda, Lipschitz had coached him in his answers to the doctor He was put in grade 4 by his medical board in June, 1940 After questioning by the police he voluntarily submitted himself to another examination

Dr Hoda gave evidence on his own behalf, and maintained that he had told C D that he had epilepsy when he became of an age to be told, and that he had treated him with bromides and phenobarbitone He had said he would like a second opinion when C D asked for a certificate, and the consultant had confirmed his diagnosis C D's parents had frequently described the fits to him, and how C D had cut his head when unconscious He did not keep records of cash payments

Mr Sandlands pointed out that his client was charged with two statutory crimes, trumped up under the phrase "infamous conduct", and emphasised the difference between the council's procedure and that of the criminal courts He argued that the council was not a suitable tribunal to judge crime The only evidence against his client was that of an accomplice He put in testimonials and asked why the police had not prosecuted when they made inquiries in July, 1940

The council did not find the charges proved

TWO ERASURES FOR IMPROPER CERTIFICATION

The case of *Louis Aimee Newton* registered as of the Elms, Stanley Road, Teddington, MRCS (1928), who had been summoned to appear before the council on the following charges

In the Case of A B That being a registered medical practitioner

1 You gave the following certificate in your professional capacity for subsequent use for administrative purposes under the National Service (Armed Forces) Act, 1939 —

The Elms, Stanley Road, Teddington, 23/3/40

This is to certify that I have attended A B of for the past six months during which time he has had attacks of fainting which are epileptic in character He loses consciousness and does not remember anything about them He has been on luminal gr 1 tre die for the past five months

L A Newton, MRCS

2 You stated in the said certificate given by you on March 23, 1940 that you had attended the said A B for a period of six months before that date, whereas in fact you had not attended him for any such period or at all before March, 1940

3 You did not make any or any proper professional inquiries before you gave the said certificate

4 The certificate given by you in the case of the said A B was untrue, misleading, or improper within the meaning of paragraph 1 of the Warning Notice issued by the General Medical Council dated June, 1933
5 You gave the said certificate for the purpose of enabling the said A B , who was to your knowledge a person who might become liable, under the National Service (Armed Forces) Act, 1939, to be called up for service, to evade any liabilities which he might become liable to discharge under or by virtue of the Act
6 You aided, abetted, counselled, or procured the said A B to produce in himself an apparent disability, and thereby to affect his apparent suitability for service in the Armed Forces of the Crown
7 You conspired with the said A B and with one S Pell and with other persons to enable the said A B to evade his liabilities under the National Service (Armed Forces) Act, 1939
And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect

In the Case of E F That being a registered medical practitioner
1 You gave the following certificate in your professional capacity for subsequent use for administrative purposes under the National Service (Armed Forces) Act, 1939

The Elms, Stanley Road, Teddington, 2/4/40

This is to certify that I have known Mr E F for some months He came complaining of weakness and tingling in his legs and also bad vision I find that he is almost totally blind in one eye and that he gets tremors on movement and that he has exaggerated reflexes I believe he has disseminated sclerosis

L A Newton, MRCS

2 You stated in the said certificate given by you on April 2, 1940, that you had known the said E F for a period of some months before that date, whereas in fact you had not known him for any such period but had seen him for the first time on April 2, 1940
3 You did not make any or any proper professional inquiries before you gave the said certificate
4 The certificate given by you in the case of the said E F was untrue, misleading, or improper within the meaning of paragraph 1 of the Warning Notice issued by the General Medical Council dated June, 1933
5 You gave the said certificates for the purpose of enabling the said E F., who was to your knowledge a person who might become liable under the National Service (Armed Forces) Act, 1939, to be called up for service, to evade any liabilities which he might become liable to discharge under or by virtue of the Act
6 You aided, abetted, counselled, or procured the said E F to produce in himself an apparent disability, and thereby to affect his apparent suitability for service in the Armed Forces of the Crown
7 You conspired with the said E F and with one S Pell and with other persons to enable the said E F to evade his liabilities under the National Service (Armed Forces) Act, 1939
And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect

In the Case of I. J —That being a registered medical practitioner
1 You gave the following certificate in your professional capacity for subsequent use for administrative purposes under the National Service (Armed Forces) Act, 1939

The Elms, Stanley Road, Teddington, 5/4/40

This is to state that I have known I J for the past seven years during which time he has suffered from epileptiform attacks He momentarily loses consciousness and falls down He is forgetful and slow in manner, but as he has been on bromides and luminal for some time, these may account for it L A Newton

2 You stated in the said certificate given by you on April 5, 1940, that you had known the said I J for a period of seven years before that date, and that during the said period he had suffered from epileptiform attacks, and thereby implied that you had attended or treated him for the said period for the said attacks; whereas in fact you had not attended or treated him for any such attacks or alleged attacks for any such period, or at all before March or April, 1940
3 You did not make any or any proper professional inquiries before you gave the said certificate
4. The certificate given by you in the case of the said I J was untrue, misleading, or improper within the meaning of paragraph 1 of the Warning Notice issued by the General Medical Council dated June, 1933
5 You gave the said certificate for the purpose of enabling the said I J who was to your knowledge a person who might become liable, under the National Service (Armed Forces) Act, 1939, to be called up for service, to evade any liabilities which he might become liable to discharge under or by virtue of the Act.
And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect

The complainants were the Ministry of Labour and National Service, represented by Mr Gerald Howard, counsel, instructed by Messrs Waterhouse & Co , solicitors Respondent was represented by Mr G D Roberts, KC, and Mr T K Edie

Charges in respect of C D and G H were withdrawn A B , E F and I J gave evidence, stating that they had been coached by a Miss Bentley in the way to simulate fits and answer questions Witnesses had paid sums of £200 or £250 to Miss Bentley or Mr Pell

I J had simulated a fit in front of Dr Newton His father was respondent's butcher and he had known him for seven years Dr Newton had treated him for hernia and minor lacerations He had had no difficulty in deceiving the Army medical board Miss Bentley had also taken him to another doctor, who had given him a certificate similar to Dr Newton's Miss Bentley had done most of the talking , he had pretended to be slow and drowsy and had shown scars produced by biting his tongue Miss Bentley had also taken him to a third doctor, who had given a similar certificate, stating that he patient in a fit This was not true , he had not front of this doctor He had begun to pretend he epileptic three or four months before his medical and had seen Dr Newton about once a week period, and had finally simulated a fit in order to him The Army medical board had been deceived had put him in grade 4 After the police had changed his mind and had volunteered for the The second medical board had put him in grade 2

Dr Newton, in reply to Mr Roberts, described his busy and successful practice, and said that he had A B at his surgery only He had complained of fits and had been given luminal tablets from the pensary

In reply to the President, he said he had r in Hackney, but his home was there He kept medical records , he had no time He did not think had asked A B if he was under any other doctor he came to the surgery A B had been brought to by Mr Pell, whom he had met socially at the C Hotel Mr Pell had said that a number of his clients near the doctor, and he would introduce them Dr N did not know where Mr Pell lived, but understood was an insurance agent with an office in the City had also introduced E F , who had complained nervousness, tickling in the legs and Respondent had sent him to a consultant, who agreed with the diagnosis of disseminated sclerosis certificate was quite true , and the medical board recorded the same finding He had never had money save 5*s* and 7*s* professional fees from people He had known I J for many years as the of his kosher butcher In the early days of the I J had begun suggesting epilepsy and had said he had not liked to disclose it earlier Witness had taken much notice until one day he had seen the boy a fit He had been completely deceived , the boy seem unconscious, his arm, leg and face twitched, his eyes we fixed and his trousers wet He had never heard of Mi Bentley, and knew nothing of the other two docto I J had seen It was quite untrue that A B 's fath had called on him and been very angry ; he had nev seen this man

Mr Roberts and Mr Howard addressed the counci which deliberated in camera, after which the Preside announced that they had found proved charges 1–5 and (except for the words "and with other persons ") in th case of A B and E F , and the charges 1–5 in respe of I J and that Dr Newton had been adjudged guilt of infamous conduct and his name erased from th Register

* * *

The case of *Arthur Carr*, registered as of 88, Brick Lan London, E 1, MRCS (1927), who had been summoned t appear before the council on the following charge

That being a registered medical practitioner
1 You gave the following certificates in your professional capacit for subsequent use for administrative purposes under the Nation Service (Armed Forces) Act, 1939

In the Case of C D

88, Brick Lane, E 1, 18/10/39

C D of has suffered from epilepsy since childhood His fit now occur at intervals of one to three weeks and are of a sever nature He is very backward mentally, and, in my opinion, i unfit for any kind of work His mother and two brothers are al epileptics Arthur Carr, MRCS, LRCI

In the Case of E F

88, Brick Lane, E 1, 29/10/39

E F of has suffered from epileptic attacks since childhood He is also suffering from mental deficiency He is now under the case of Dr G Konstam of 40, Harley St , W 1
He is unfit for any kind of work Arthur Carr, MRCS, LRCP

In the Case of G H

88, Brick Lane, E 1, 29/10/39

G H of has suffered from epilepsy since childhood His attacks come on at intervals of one to three weeks He is partially deaf owing to an old mastoid operation and he is mentally deficient He is unfit for any work He is now under the care of Dr J Burnford of 4, Devonshire Place, W 1, for his epilepsy
Arthur Carr, MRCS, LRCP

88, Brick Lane, E 1, 30/10/39

G H of is an old epileptic with frequent attacks since child hood He is also partially deaf owing to old mastoid trouble He is under the care of the West End Hospital for Nervous Diseases and has also been examined by Dr J Burnford of 4, Devonshire Place He is useless for any kind of work Arthur Carr MRCS LRCI

In the Case of I J

88, Brick Lane, E 1, 30/10/39

This is to certify that I J residing at is suffering from epilepsy and is unable to follow his occupation on 31/10/39 following epileptic attack

A Carr

88, Brick Lane, E 1, 6/11/39

I J of is suffering from idiopathic epilepsy The attacks began about six or seven years ago with minor manifestations, major fits occurring for the past four months During these attacks he bites his tongue and is incontinent of urine He is under the care of Dr Geoffrey Konstam of 50, Harley Street W 1 He agrees that he is suffering from epilepsy but in view of his rather slow reaction-time he is having him admitted into hospital for observation and investigation as there is a possibility of a cerebral tumour being present

Arthur Carr, MRCS, LRCP

88, Brick Lane, E 1, 14/11/39

Mr I J of is suffering from epilepsy He is under the care of Dr Geoffrey Konstam of 40, Harley St , W 1 He was admitted into the East Ham Memorial Hospital last week for investigation as there was the question of a cerebral tumour being present He has had his head X rayed, and his CSF and WR done Since the lumbar puncture he has had very severe headache

I have not yet been informed of the results of the investigations

Arthur Carr, MRCS, LRCP

88, Brick Lane, E 1, 20/12/39

I J of has been having attacks of dizziness for six or seven years These passed off quickly and recurred about every month About six months ago major attacks commenced during which there would be an aura of headache, and after a few minutes he would throw himself about, bite his tongue and lose consciousness He usually was incontinent of urine during the attacks The history suggested a typical history of epilepsy He was sent to see Dr Geoffrey Konstam of 40, Harley Street who agreed with this view but who thought that his reaction time was slow and should be further investigated He was therefore admitted into East Ham Memorial Hospital and had his CSF, WR, &c , done No signs of cerebral tumour were found and after a week was discharged as being suffering from idiopathic epilepsy At this time he suffered from intense headache—? due to lumbar puncture During the past six weeks he has had about five fits but are now becoming somewhat less frequent He is on tab sod phenobarb gr 1 bds He finds the tablets have a soporific effect There are still spells of dizziness

Arthur Carr, MRCS, LRCP

In the Case of K L

88, Brick Lane, E 1, 18/3/40

K L of has been suffering from epileptiform convulsions for the past five years During these attacks which occur every few months, he usually bites his tongue and wets himself They frequently occur during the night He had treatment intermittently but this failed to control his attacks Dr Bellingham Smith of 12, Wimpole St W 1, thinks the prognosis in his case is poor on account of the marked mental deterioration His view is that he may have to enter an institution sooner or later He is on luminal gr 1 bds There is an interesting atrophy of the right supra- and infraspinatus muscles

Arthur Carr, MRCS, LRCP

In the Case of M N

88, Brick Lane, E 1, 18/3/40

This is to certify that M N residing at is suffering from influenza and is unable to follow his occupation

Arthur Carr

88, Brick Lane, E 1, 28/3/40

This is to certify that M N residing at is suffering from post influenzal debility and is unable to follow his occupation

Arthur Carr, MRCS, LRCP

88, Brick Lane, E 1, 22/4/40

M N of has been suffering from epilepsy for some years He gets attacks of both grand and petit mal The mental condition is very poor, and Dr Pearse Williams of 144, Harley Street, W 1, under whose care he is is afraid that it will gradually develop into a state of chronic dementia He has suggested an institution for him but the relatives are very anxious to avoid this step He is at the moment having luminal gr 1 twice a day

Arthur Carr, MRCS, LRCP

In the Case of Q R

88, Brick Lane, E 1, 11/4/40

Q R. has been suffering from epilepsy for the past nine years He is a mental defective and has had very little treatment in the past for his condition He is under the care of Dr Hinds Howell of 145, Harley Street, W 1, who regards the prognosis as extremely bad He thinks that he might have to go into an institution under the MD acts He is on luminal gr 1 bds

Arthur Carr, MRCS, LRCP

In the Case of U V

88, Brick Lane E 1, 31/5/40

U V of has suffered from idiopathic epilepsy for many years His attacks occur frequently—every week or two He is under the care of Dr J Purdon Martin of 9 Harley St., W 1, who does not think that his mental condition is likely to improve At present he is having tab sod phenobarb gr 1 bds

Arthur Carr, MRCS, LRCP

In respect of each case the further charges were, mutatis mutandis, those printed as Nos 3, 4 and 5 in the case of I J under the Newton case No evidence was offered to support similar charges in cases A B , O P and S T The complainants, the Ministry of Labour and National Service, were represented by Mr Gerald Howard, counsel, instructed by Messrs Waterhouse & Co Respondent was represented by Mr A A Pereira, counsel, instructed by Messrs Le Brasseur & Oakley, on behalf of the London and Counties Medical Protection Society

Mr Howard explained that the eight cases in the charge fell into two groups the first (C D , E F , G H. and I J) had occurred in the last two months of 1939 and the second (K L , M N , Q R and U V) were in the period March 18 to May 31, 1940 The first three had been put into touch with Dr Carr by a Miss Brown , I J by a man unknown; and K L , M N , Q R and U V by Pomeroy, a man who held a position in the "National Eye Service," an institution close to Dr Carr's premises C D had paid £200, E F £350, G H 350 guineas and I J 50 guineas to Miss Brown Pomeroy had had £130 from K L , £150 from M N , £150 from Q R and £150 from U V In each case the person had shammed epilepsy before respondent They constituted such a systematic series that no doctor could have been deceived by all of them They came from districts as remote as Regent's Park, Brondesbury, Stepney and Finchley to see Dr Carr for the first time in Brick Lane None of them had ever suffered from fits of any kind

C D gave evidence that he had wanted to evade military service, and that Miss Brown had taken him to Dr Carr, instructing him how to behave and answering most of the questions Dr Carr had not asked him for previous history or treatments , he had acted too "foolish " for such questions to be reasonable Miss Brown had also taken him to Dr Konstam, where he had acted in the same way Miss Brown had accompanied him to the medical board and handed in certificates which he had never seen He was exempted, but at another board two months later he had been passed A1 ; grade 2 for eyes He had always driven a car

E F testified that Miss Brown took him to Dr Carr, having coached him for weeks in advance He did not behave normally, but pretended to be slow and stupid Dr Carr suggested a specialist, and gave Miss Brown a letter to take to the specialist Miss Brown had taken him to the consultant and he had behaved in the same way He did not simulate fits before the doctors He was brother to C D whom Dr Carr had seen in a similar condition Miss Brown had also accompanied him to a house near Dr X's home where an attack had been staged and Dr X called in He was now a motor driver in the Army He had seen Dr Carr twice, the specialist once and Dr X half a dozen times He lived at Brondesbury and went to see Dr Carr in the East End He had never seen a doctor in his life before. Dr Carr had received a letter from the specialist before writing his certificate

G H , brother of E F , testified that his father had introduced Miss Brown, who had taken him to see Dr Carr—to the East End from his home in the north west An old lady—Miss Brown's mother—had accompanied them, and had seen Dr. Carr first, pretending to be his grandmother Miss Brown was pretending to be his "aunt " She had told him to act stupidly, which he did. He had paid 350 guineas to Miss Brown in £1 notes She had taken him to two other doctors as well He had not simulated fits in front of any of them He did not know that the second doctor had written to Dr Carr Miss Brown had taken him to the medical board and handed in documents. He had been put in grade 4 , but a year later had been put in grade 3 and had joined the Army. He had since been invalided out for osteomyelitis of the knee He had had a left mastoid He had complained to the doctors of disliking the taste of his medicine , in actual fact he had never had any medicine He had attended the West End Hospital for Nervous Diseases at the end of 1939 Miss Brown had sent him there

I J gave similar testimony Dr Carr had given him luminal and he had taken it for a few days A man accompanied him, purporting to be a relative, and asked for a second opinion , they went to see Dr Konstam and again witness simulated epilepsy. He was then admitted to the East Ham Memorial Hospital, where he continued to feign epilepsy After a week there he felt really ill, and went to see Dr Carr again. He had not simulated a fit He had been put in grade 4 by the Army medical board, but on re-examination he was put in grade 1 He had paid £50 in £1 notes to the man who accompanied him This man had coached him, pretended to be a relative and answered some of the doctor's questions Dr Carr had examined him very thoroughly He had been told to act slow and not to shave

K L testified that Pomeroy had arranged the whole thing for him, and had told him to tell Dr Carr that he had been under a certain doctor who had died. Pomeroy had also provided a man to pose as his brother, accompany him to the doctors and medical board, and answer the questions

M N said that Pomeroy had sent him to Dr Carr at a time when he really was feeling rather ill and shaky He told Dr Carr he had had fits Pomeroy did not think he had been sufficiently trained to go as a full-fledged epileptic, he had had many more lessons before going to Dr Pearse Williams

Q R said his mother opposed his wish to enlist and introduced Pomeroy He saw Dr Carr alone and was thoroughly examined for a fee of 3*s* 6*d* He gave an epileptic history, as instructed He had never had fits He had paid Pomeroy £200 in £1 notes

U V said he had never had any kind of fit He had wanted to go into the Army but had succumbed to pressure He had been sent to Dr Carr by Mr Pomeroy, to whom he had been taken by a business acquaintance He had never had a doctor, Dr Carr had inquired if he had been treated and he had replied that he had, but only when a child He had paid 2*s* 6*d* to Dr Carr and £175 to the business acquaintance, and had visited the doctor again a week later saying he had had another fit At a third visit, a fortnight later, he had asked for a second opinion, he had told the consultant the same story and been thoroughly examined At another visit to Dr Carr he had received a certificate He was accompanied to his medical board by a man produced by Pomeroy Pomeroy's partner Rose had gone with him to the specialist and pretended to be his brother He was graded 4, and 1 at a later board.

Dr Bellingham Smith testified that he had seen K L and honestly believed him to be an epileptic He did not know that his certificate was to be used for an Army medical board He did not think Dr Carr ought to have quoted his confidential opinion in the certificate K L had been accompanied by people claiming to be his father and brother, who had done most of the talking A very complete picture of epilepsy had been presented It was easy to be deceived by one feigning epilepsy Dr Pearse Williams and Dr J Purdon Martin gave similar testimony

Dr Carr said that at the relevant period he was seeing 60–70 patients a day, and many of them came from a distance as a result of evacuation He had had no idea that any of the patients were not genuine The lady described as "Miss Brown's mother" was an old patient of his, taken over from his predecessor Early in 1939 this woman had told him she had a number of mentally defective and very troublesome nephews and grandsons who would not see doctors, and could he help? This was months before C D came to him He had examined C D. very carefully and concluded that he was suffering from epilepsy with mental deterioration He had suggested Dr Konstam as consultant and had written a letter for the relatives to take Dr Konstam had written back fully agreeing with the diagnosis, and suggesting treatment Dr Konstam was now in the Middle East and not available to give evidence Dr Carr had transferred C D to another practitioner because of distance from his surgery

In reply to the President he said that since the war he had given very many certificates of this type—open, in a plain envelope, addressed to nobody in particular

E F (the brother of C D) had been accompanied by the same woman, purporting to be his grandmother, and she had answered most of the questions and given a family history of epilepsy He had sent this case also to Dr Konstam in the same way, and Dr Konstam had written a long clinical report, concluding that E F showed the same condition as his brother, but rather worse E F was transferred to the other practitioner in the same way as C D, enclosing Dr Konstam's letter His fees in all the cases had been 3*s* 6*d* or 2*s* 6*d* and he had never had any other money He believed the certificates might be used for a medical board

G H was brought by the same old lady, as her grandson, and again she answered most of the questions This case had been referred to a physician, on the staff of the London Jewish Hospital, who had written back "What can anyone do for this poor boy? He is a sad specimen . I could get little out of him, but his devoted aunt told me the history " and suggesting treatment He added that a certificate was hardly necessary, as no board would recruit the man, but it should be given by family doctor The "grandmother" had told that he was the family doctor, there was no Witness had asked about previous medical attendance every case Treatment had continued, he believed, the date of the certificate This patient had treated by Dr Worster-Drought at the West End pital without reference to witness, who had been annoyed about it He could not remember why he given two certificates on two successive days

He remembered I J very well, and had treated him some months He gave similar accounts of his with the other witnesses

Counsel on both sides gave addresses, and the after deliberation in camera, announced that the had found all the charges proved and had erased D Carr's name from the Register

In England Now

A Running Commentary by Peripatetic Correspondents

It is remarkable, as one goes on ward rounds, to no how much honoraries vary in their sensitiveness to the reactions of the patient One brilliant man will not permit the mention of tuberculosis, cancer or syphilis, even in a differential diagnosis Another is equally annoyed if you talk about specific infections and Koch's bacillus One of them must be right, though goodness knows which I remember a ward round where we saw a man with aortic incompetence due, as it happened, to atheroma. At the top of his voice, since this was a popular round, the honorary talked about syphilis as the usual cause of this complaint Quite softly, as we walked away, he said that it was not the cause in the case of this particular man What we wanted to know was the effect on that man's status among his friends in the ward —did they, for instance, like using the same bath and cups and newspapers when the non-venereal transmission of syphilis is so widely believed in? And did anyone tell the man himself that it wasn't syphilis? At other times, I must admit, it is the bystanders who are to blame There was once an old lady on whom the gynæcologist was doing a ward round for students and GPs combined He took immense care to talk only of Koch's bacillus in the differential diagnosis "But it might be Pick's disease?" asked one of the GPs "It might," said the gynæcologist unwarily "My aunt died of that," said the GP Some people use their teaching as part of the patient's treatment, telling us the things the patient ought to believe and might not have believed if he hadn't seen us being told them too Others, of course, don't teach at all, but one feels more comfortable with them than with the people who describe the end-picture of heart-failure over a patient who has just realised he has a heart lesion And once we saw an honorary fold his arms over a patient's shoulder and make the most incredible remark ever "When you see," he said, "this dear old lady's lungs on the post-mortem table, as you very shortly will " and he told us what we'd find The end of the story ruins the moral The old lady laughed and laughed, she laughed till she died

* * *

I have just returned from Neo-Slavonia, that small buffer-state created after the last war and still clinging miraculously to its independence in this one Ever since Prince Michael's visit[1] to this country in 1924 Neo Slavonia has become more and more anglicised Not only has it adopted our customs and institutions wholesale, but the very place-names have been modified, and provinces such as Muddlesix and Neitherfolk have a curiously British ring about them

Their tuberculosis problem is acuter than ours in that their general public is aware of it, and it is the general public, or rather one section of it, that has done much to put it on a logical footing by forming a Tuberculous Association Every new patient suffering from tuberculosis automatically becomes a member of the Tuberculous Association and immediately receives a copy of the current *Handbook* Subsequently he receives every issue of the rather sporadic *Bulletin* The association, it seems, only meets as a body once a year for its business meeting The *Handbook* is revised yearly, but much of its contents have remained unaltered for the past ten years It is still laid down, for example (in chapter I), that at the first suspicion of tuberculosis, the patient should at once acquire residential qualification in the province of Muddlesix From time immemorial residence in a parish for three consecutive Sundays has been regarded as adequate for matrimony or judicial hanging, and more recently in a case at law this period of time was adjudged (as the *Handbook* quaintly puts it) "sufficient to cover all shorter-term catastrophies" The advantages gained by pursuing this course are considerable Patients registered in Muddlesix are sent to Muddlesix sanatoria These are smart young go-ahead establishments, whither the best physicians and surgeons are drawn by reason of the excellence of the amenities for treating the disease Every therapeutic adjuvant (such as artificial pneumothorax, phrenic paralysis, thoracoscopy, pneumoperitoneum, thoracoplasty, &c), is in constant application , and new forms of treatment, such as Monaldi drainage, are adopted as soon as their value has been demonstrated elsewhere on the continent The running expenses amount to as much as 4½ golden kröner per patient per week These sanatoria are, of course, crowded out To obviate the disasters attendant upon a long waiting-list, and to encourage the patient who may desire to travel "first class" to health with privacy, luxury cuisine, mountain air or sea breezes, and the companionship of patients of the opposite sex, the province of Muddlesix will pay that 4½ golden kröner towards his upkeep in whatever establishment he chooses to grace so long as he can afford to pay the "difference in the fares"

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[1] Milne, A A (1924) "To Have the Honour" Wyndham's Theatre

By way of contrast is described the lot of the patient in the province of Fumblefive who, because he wishes to be treated nearer home, or because he is debarred by some technicality from registering in Muddlesix, or because he is bone-stupid, becomes a registered patient in Fumblefive If the diagnosis is ever confirmed (and it may not be unless the sputum is found to be TB positive), his name is put down on the waiting-list of one of the Fumblefive sanatoria, and he will probably be warned that he will have to wait six months for admission Should he be in a hurry to stop getting worse, no obstacle will be raised against his making his own arrangements to go elsewhere , but he won't get a pfennig towards his maintenance there Should he perforce have to go to a Fumblefive sanatorium he must expect to find an establishment between 20 and 25 years behind the times The women's sanatorium has no X-ray plant or weighing machine At the men's sanatorium they have just begun tentatively to tinker with APs (in spite of the Very Senior Physician's prejudice against them) , and this year, the July *Bulletin* informs us, one advanced case was sent away to the local hospital for thoracoplasty, and did not return The expenses at the Fumblefive sanatoria work out at 2½ golden kroner per head per week In the province of Shambleseven things are much the same except that a patient can (by pulling the right strings) extract the 2½ golden kroner a week towards his maintenance elsewhere

More than 50% of the Muddlesix patients are treated with artificial pneumothoraces (Gnirveau and Nocks, 1940), many of which have to be continued after the patient's discharge back to work The *Handbook* (see appendix I) gives a complete list of every refilling station in the kingdom, graded very much as hotels are graded in our British A A Guide

***** *Hengist*, at Hospital, 9–10 AM, 6–7 PM , males, Mon , Wed , Fri , females, Tu , Th , Sat , no queue , asepsis , X ray screen before and after , photo monthly , size 17 needles

* *Horsa*, at Town Hall, 10–10 30 AM , males Tu , females Fri , queue 2 hr , no X rays , peashooters

Private consultants are likewise graded (see appendix II) according to whether they perform their own X-ray and blood sedimentation examinations, or send the patient next door to a 3-kröner radiologist and then round the corner to a 2½-pfennig pathologist

The function of the *Bulletin* is to advise members of important changes and developments in the world of tuberculosis since the last *Handbook* was published , but its most popular columns, without a doubt, are those reporting the "Sayings of the Month" Each of these *mots* must be vouched for by at least three witnesses who were actually present at its delivery, and a small prize is awarded monthly by the associate editors for the one adjudged most memorable The following are a random selection from the July 1942 *Bulletin*

"X-rays ? No by'r lady fear If I had X rays at my sanatorium I'd have to start all this by'r lady AP nonsense"

"I don't believe in sanatorium treatment It's artificial A patient should be treated under the same conditions as regards climate and food as he'll have to live in when he's cured"

"No You can put those X rays back in their folder, madam This (fondling his stethoscope) has been my good friend for more than forty years , and we understand each other"

"Rest, fresh air, and food—especially green vegetables—those will cure any case that can be cured I know that some of these doctors claim marvellous results from their blowings-up and choppings about , but how do they know they wouldn't have got on just as well without them ? Or even better, eh ?"

Theoretically the *Bulletin* is published each month, but in actual practice it is apt to lag behind the months, and the January number may not appear until April In this way it keeps remarkably up to date with the latest news In fact, occasionally it is a little premature No little comment was caused when the obituary notice of Lessij, a Very Senior Physician whose cremation took place in March, appeared in the previous December issue The associate-editors' decision that he had been dead for months and that they were the first to notice it was not well received in some quarters, but had to be accepted as final

* * *

Two more determined social climbers than the verb "to perspire" and its attendant "perspiration" it would be hard to find There was a time when these words were the hall-mark of the genteel but they have now so thoroughly permeated our social system that some doctors, those honest members of the working class, are heard employing them Patients are described in case-notes as "perspiring freely" in the course of his illness or after that line of treatment It is, I suppose, only a matter of time before soldiers due for leave will describe themselves as "perspiring on the top line", or that we shall "don our perspirers" (or should it be perspirators ?) after taking exercise Perspired labour, it is to be devoutly hoped, is a thing of the past, but perhaps some of us may live to hear a refined Hamlet asking "Who would fardels bear, to grunt and perspire under a weary life " I cannot imagine why the Prime Minister did not offer us blood and tears and toil and perspiration

* * *

I have encountered a negation of the well-known fable "Once bitten, twice shy," in my private war against the rodents, and I hasten to present this clinical account in an endeavour to facilitate my promotion to Orthopædist to the Royal Infirmary, Mousehole I occupy a flat designed by its total lack of comforts to keep me always out among my slum patients The mice are thus free to steal my goods by day, and have earned my undying hatred for their noisy gambols by night Being a humanitarian and recognising the virtue of sharing my rations with the lowly creatures, I stopped up their hole with the cork of a bottle of Bristol Cream with which I had intended to celebrate the armistice The pneumatic drilling and noisy bulldozing which occupied them for five nights in reopening the entrance forced me to sterner measures On the first, second and third nights my trap was still set but its cheese had gone I found the secret was to apply a very large lump of cheese to occupy my guests during the long latent period of the trap, and on the fourth night Father mouse was caught across the right upper thigh He moved the trap 16 feet, but then expired His kidney showed the typical histology of "crush syndrome" The fifth night found Aunt mouse caught squarely by the neck and dead Uncle mouse was caught on the sixth night but only by the left knee-joint I got up and found him trying to take his weighty Balkan beam down the hole with him When I applied traction his tail shot straight up like a rocket and with a mighty heave he was gone My trophy was one left leg attached to a deadly engine of war I no longer had the heart to use The seventh and eighth nights read no trap, no sleep, and no bread unsoiled with Gaertner's bacillus in the morning The next night's banishing of my conscience found Sister mouse caught across her bread basket and Baby mouse next night with a clean transection of C4 The eleventh morning revealed a trap undisturbed—did they know my week's rations were exhausted and it was only Thursday? Next Monday, Uncle mouse came shopping again in spite of his three legs and died. My anxiety about having to take up the floor-boards was relieved and I reflected how lucky I was not to have to run such risks to get my daily bread

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Letters to the Editor

DIPHTHERIA IMMUNISATION AND THE PUBLIC

SIR,—The important conclusion arrived at in the report of the Committee for the Study of Social Medicine is, as your leader infers, as old as the first general scheme of diphtheria immunisation Though there is almost universal agreement on the urgency of the need for diphtheria immunisation and though most are aware that it is personal contact that counts—as it does in so much of public health work—the organisers of the campaign are able to report only limited success up to the end of last June The next move would seem to lie with the Ministry of Health Collation and circulation of estimates twice yearly to all local authorities irrespective of local government status within circumscribed areas would enable each medical officer of health and each local authority to study the results obtained in their own area in relation to those of their neighbours It might then be discovered that administrative difficulties are playing a greater part in defeating the aim of the organisers of the campaign than has been apparent on the surface For example, has the recent call-up for military service of public health medical staffs affected the position adversely? Is the campaign suffering from insufficiency of local clerical assistance, perhaps the result of disparity in wage rates between local authority temporary staffs and clerical staffs employed in commerce and industry? Is it suffering from delay in filling vacancies in the health visitor staffs due in part to cumbersome local government machinery and in part to a shortage of suitable candidates?

Personal estimates of the proportion of immunised children in an area are not enough Already rumour has it that your peripatetic correspondent knows a man who is prepared to lay odds on the date when the first estimate will exceed 100% The main problem, of course, is diphtheria control, and along with estimated proportions of immunised children there should be issued for each area for each 6-monthly period the numbers of diphtheria notifications and deaths amongst non-immunised and immunised children I believe that circulation of this information would in itself bring more uniformity into local schemes and tend to eliminate the disparity in results existing between adjacent areas It would also provide medical officers of health with valuable local epidemiological information so far not available to them At the same time it might enable us to devote some time and attention to the next campaign—that against whooping-cough

Chadderton J S G BURNETT

SIR,—The valuable survey of public opinion on such an important matter of public health as diphtheria immunisation, carried out by a committee independent of local authorities, has produced evidence and conclusions of which the soundness is attested by medical officers responsible for carrying out diphtheria immunisation, and by the action taken by the Ministry of Health in line with the principal recommendations No doubt members of the committee would agree that though 9 out of 10 mothers gave only one source from which they had heard of the scheme, this would not necessarily be the only factor which had influenced them in making a decision A mother would no doubt remember best the final influence which made her arrive at a positive or negative conclusion, but would forget, or might not even be aware of, previous influences The possible additive effects of influences from all sources should therefore not be forgotten

This might very well be the case, for example, with wireless talks, which appear in the survey to have comparatively little influence There have been three broadcasts this year on diphtheria immunisation on Feb 27, April 22 and Oct 2 I have taken the new cases coming to "open access" clinics in this for a fortnight before the broadcasts, and them with the new cases for the next 4 weeks broadcasts There were very sharp rises shortly the first and third broadcasts The second on April 22, did not have this effect Other local propaganda were fairly constant, and it is not to believe that the rise in the number of new after the wireless talks was more than pure on the two occasions mentioned Assuming that was a boosting factor, the increase depended upon ease with which parents could put their resolutions decisions into effect Though it may be more administratively, the "open access" clinic is much convenient to parents If they know that a clinic is always held on the same day and at the place, and whatever form-filling is necessary can be at the time when the child is brought for then boosting factors such as radio may have more effect than if there is delay in adminis procedure such as fixing an attendance by ap through the post The chief difficulty of "open clinic is that it is impossible to gauge beforehand numbers that will appear, but where there is reason anticipate large numbers (and I have had many with over 200 attendances per session) 2 doctors are in charge of the clinic, and additional attendants provided As the survey says, most mothers are aware of diphtheria immunisation, and local is therefore directed not so much to persuasion as informing parents when and where their children be immunised, acting on the assumption that most them are willing for it to be carried out This can be done with settled clinics on definite days, and handbills all give great prominence to the days times of the various clinics Local circumstances considerably, and what may be successful in one is not necessarily successful in another, but ease of is an important factor, and in densely populated it is advisable to have clinics to serve particular l in much the same way as welfare centres. These be held at welfare centres but I am also using, as doubt many others are, first-aid posts where centres not convenient

The survey method of ascertaining public opinion medical and public health questions seems to be a innovation, and might be used in other directions to help us to take the most promising line of action and to obtain the maximum response from the public

Islington V FREEMAN.

YOUTH PROBLEMS AND MENTAL HEALTH

SIR,—On Oct 13 the Secretary of State for Scotland stated in the House of Commons that 40% of Glasgow's public air-raid shelters had been damaged, doors, lighting, seats and sanitary installations were smashed mostly by youngsters of 14–17 years of age In one district every public shelter was damaged and repaired twice, in 5 other districts four-fifths of the shelters were so treated £70,000 was spent by the corporation for repairs caused through wanton destructiveness by gangs of street urchins The magistrates' committee (*Glasgow Herald*, Oct 14) considered as counter-measures that slides should be shown in cinemas and talks given, that the BBC and the Ministry of Information should be asked to cooperate, and that bills should be posted in factories When somebody asked in Parliament if other big cities had the same difficulties, the answer of the Scottish Secretary was No So much for the boys

The Union of the British Women's Temperance Association discussed, a few days later, the present social problems of Glasgow girls (*Ibid*, Oct 22). One speaker reported on two definite categories the girl under 17, and the older girl who manages to evade the Ministry of Labour in order to prey on Service men These elder ones pass on their identity cards, loiter in the railway stations and spread venereal disease, dodging treatment by escaping from hospital before they are free from infection The younger girls "require something very constructive, definite and kind in the form of a real discipline," said one of the wardens More women policemen and stricter application of the law were among the suggestions of the meeting More street lighting, a curfew for young people and revision of the system of payment of ships' crews were among the remedies proposed at a meeting dealing with the same social evil under the chairmanship of the Lord Provost (*Ibid* Oct 9)

In the causation of this distressing behaviour among the young one recognises the influence of war conditions like the blackout, the absence of paternal control and overcrowding, but war opens up old sores as well as inflicting new wounds Nobody at these meetings seems to have mentioned the question of mental health It is well known that the roving gangs of young riff-raff are often organised by psychopathic or morally defective ringleaders Systematic examination of prostitutes in many countries has shown that the mentally defective and unstable psychopath provide a large proportion especially among those who start their career at an early age Glasgow's mental health services dealing with the detection and treatment of this type of case are —as far as I could find out—inadequate There are 6 child guidance clinics, but only one employs a full-time psychiatrist Five are run by educational psychologists —that is, by a teacher who *only* treats the children by coaching them in subjects in which they are backward He can consult a psychiatrist, but he is responsible for therapy It is as if an orthopædic clinic were run by a chiropodist Of 5 psychiatric outpatient clinics for adolescents and grown-ups only one works on 5 days of the week, the others open on only one afternoon Treatment here is partially in the hands of lay psychotherapists but this may be because of the absence of qualified psychiatrists in the forces The mental-health services themselves are, I gather the same as in peace-time. and how incredibly insufficient they are for a population of nearly 1¼ million Other municipal health services —e g., midwifery—seem well advanced in Glasgow Perhaps the asocial behaviour of juveniles will bring home to those in authority how much their psychiatric services are behind the times but somebody has to let the cat out of the bag

Dumfries W MAYER-GROSS

MEDICAL PLANNING RESEARCH

SIR —May I begin by congratulating MPR on their very fine interim report showing a breadth of view conspicuously absent from certain other reports on the same subject There is one criticism to which a reply is urgently needed The whole scheme rests on compulsory contributions How is the compulsion to be applied? The report suggests only that benefits will be withheld, excluding medical benefits which will continue in any case This means that a man's dependants will be penalised by the withdrawal of the important children's allowances, while he himself will suffer so much from the withdrawal of unemployment benefit that he will be forced to apply for some other form of state help (i e, public assistance), which it would not be possible to deny to him. In other words, if these varied benefits are essential for the maintenance of a proper standard of social life and security, they cannot be withdrawn from the individual and his dependants by way of penalty Does MPR suggest any other method of compulsion? Existing national health contributions are made the responsibility of the employer and not that of the recipient of benefits The employer may even be sent to prison if he does not ensure that cards are properly stamped but he is given a statutory right to deduct the workman's contribution from his wages. The impossibility of extending this arrangement to those who have no employer, and yet earn their own livelihood, together with the equal impossibility of inventing an alternative plan, has hitherto prevented the inclusion of many deserving persons in national health insurance except on a voluntary basis The report implies that it has discovered an alternative method which will prove satisfactory.

Sevenoaks GORDON WARD

LABORATORY TECHNICIANS OF THE FUTURE

SIR,—I read with great pleasure your annotation of Nov 28 on the future status of the laboratory technician A general recognition of the importance of their work and the establishment of their training and subsequent status on a proper basis is long overdue Clinical pathology, one of the youngest medical specialties, has until recently been a neglected child Any odd corner was good enough for the laboratory any converted garden shed—and not always converted—would do for the post-mortem room, and nobody seemed to be interested in the laboratory worker, his training or his future From these dark ages we seem slowly to be emerging, better laboratories and better equipment have everywhere been provided and now at long last the technician's position is to be regularised and improved Much credit is due to the founders and officers of the PBLAA who for many years have worked to this end

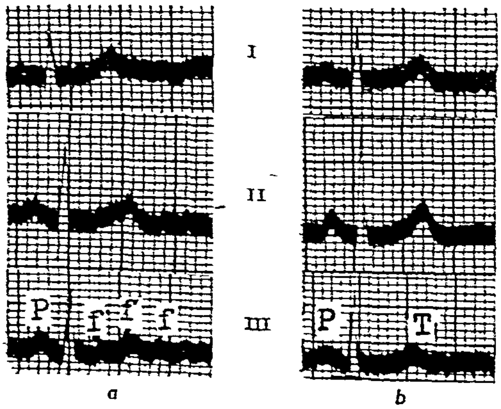
There is one small point on which I should like to comment. The cleaning of glassware is a problem in many laboratories and some employ a cleaner and others rely on the probationary period of the new recruit to solve the difficulty In my experience the former solution where possible, is the better one Although it is important for junior technicians to learn to appreciate the meaning of "clean glassware"—not always so simple for the ex-schoolboy—they should certainly not be sentenced to the sink for months or years on end which is inevitable when a vacancy above them is not likely to occur for some time Surely there is a more economic way of selecting candidates than by estimating their suitability in decibels of crashing glassware. If this work is to attract the better educated boy which the suggested curriculum will demand, these routine menial probationary duties must be reduced to a minimum It will indeed be an advance when it is possible to offer the prospective technician not only an occupation of exceptional interest but also an established position with a better financial reward and the prospect of obtaining the qualifications of a chartered society

Kent and Canterbury Hospital NORMAN H ASHTON

ELECTROCARDIOGRAM IN TRAUMA OF THE HEART

SIR,—As a supplement to your annotation of Oct 31 the following case may be of interest

A man of 48 sustained an injury to his chest wall as a result of his spectacle case being driven on to the costochondral junction just below the left nipple When he was first seen two days later he had pain on pressure over the site of injury and this was also produced on breathing or coughing No fracture was shown by X ray Although the patient stated that he had previously been in good health, the X ray suggested an enlarged aortic arch and an electrocardiogram was taken (*a* in figure) This showed f waves in lead III although normal P waves were present, it also showed complete irregularity of rhythm Another electrocardiogram three days later (*b*) showed no f waves although arrhythmia remained The differential diagnosis between auricular flutter and fibrillation was not easy, but after consultation with Dr Peter Miles it was decided that the curve was an example of fibrillation



a *b*

It is interesting to note how signs and symptoms of rib damage might mask those of myocardial trouble, and the value of an electrocardiogram in such a case is obvious

Manchester Square, W 1 H W HALES

CÆSAREAN SECTION AND THE CRUSH SYNDROME

SIR,—I am gratified to learn that Mr Milne allows that spinal anæsthesia has a place in obstetrics In view of his opinion that asepsis can never be assured in midwifery practice, it is difficult to understand why he should hang his head in shame when pyrexia, white leg or embolism may have occurred on rare occasions in his practice It is true that I had an unbroken series of successes for ten years, but only a few more than fifty patients were concerned, and perhaps the incidence of white leg and embolism in forceps delivery under the worst conditions would scarcely show itself with such a number Since the outbreak of war I have had three severe infections. in one neither spinal nor forceps was used, but of the other two patients one died A friendly or well-paid counsellor might argue that the conditions imposed by the state of war had been contributory, in any case, Mr Milne may content himself on learning that he does not hold a monopoly of the head-hanging business

Being by nature perverse, I attributed the excellence of my results—obviously due to good luck and the paucity of material—to the limitation of fatigue in the patient, to the use of chlorine, to the early and brief starvation and curtailment of fluid Mr Milne, in his brilliant criticism, does not refer to the effect of fatigue, he does not mention the use of chlorine or of any other antiseptic in obstetrics, but his opinion that starvation and fluid restriction is "unphysiological" has caused me to think—and to write—quite a lot Sometime I may be able to publish a dissertation on this interesting criticism At the moment, I remain incorrigible, but I leave Mr Milne master of the field If permitted, however, I would advise Mr Milne to read, or re-read, Semmelweis's practice with parturient women If washing the hands in chlorine diminished the incidence of puerperal fever, perhaps the application of the same stuff to the pudendal region and to the genital canal, and the knowledge that vaginal hysterectomy can be performed without sepsis, may cause him to alter his view that asepsis in midwifery is impossible

Rugby R H PARAMORE

TIME AND THE SECOND M B

SIR,—In connexion with the article on the second MB by Prof Samson Wright (*Lancet*, Oct 3, p 405) may I suggest the following revised first-year biology course Assuming that the work of the first year should be a preparation for human anatomy and physiology in the same way that those subjects are a preparation for clinical studies, and assuming also that elementary biology should be taught in schools as a part of general education, the time available for biology in the first year could be used as follows

I One term of lectures and dissection, on the comparative anatomy of vertebrates from the point of view of mammalian evolution This could be based as at present on the dogfish, rabbit and the development of the fowl, but studied more thoroughly and with more emphasis on applications to human anatomy

II One term of lectures and practical work on elementary physiology as an introduction to human physiology and to experimental method.

III The whole of the histology course, also occupying one term, as at present taught in the second year

The examination could consist of written questions on parts I and II with a practical examination in dissection, identification of specimens and comment on experiments, and also a practical examination on histology like that which already forms part of the second MB

This arrangement would save time directly because part of the second year's work would be done in the first year, and indirectly because all the time would be spent on work having a direct bearing on the work of succeeding years It would be more successful than the existing course in arousing and holding the attention of the student Time would thus be saved for that extra teaching which, as Professor Wright points out, modern physiology demands A few lectures on genetics could best be given in conjunction with lectures on the so-called inheritable diseases in the later years of the curriculum

University of London J H WOODGER

GRANULES IN PUS CELLS

SIR,—Your friendly annotation of Dec 5 (p 67 reads more into my short paper on granule movement pus cells (*Brit J exp Path* 1942, 23, 188) than contains, crediting me by inference with ideas I do hold In its final sentence you write "Hope Sim concludes that Brownian movement cannot explain patently vital a phenomenon as this granular turbulence it is something more, he thinks, than a mechan consequence of the colloidal nature of the cytoplasm, is in some way an expression of the individual propert of the granulocyte" May I make it clear that I do consider granule movement a patently vital phenomen nor do I think it is in some way an expression of individual properties of the granulocyte? I am sure that I understand the meaning of such expressions It is said that the granules of certain protozoa and some cells exhibit Brownian movement—a reasonab enough statement The movements of certain protozo probably depend on local reversible gelation of th colloidal cytoplasm Immobilisation of the granule has been taken as evidence of such gelation Irreversibl gelation of the cytoplasm is said to occur at cell death and the immobilisation of all the granules is cited a part of the evidence This conception has sometime been invoked to explain the behaviour of leucocytes, and my paper was concerned to show that because the granule motility of the granulocytes is not Brownian the theory cannot be applied to leucocytic behaviour without closer scrutiny, and further that in granulocytes immobilisation of the granules at cell death often occurs without cytoplasmic gelation The cause of granule motility in pus cells may not be far to seek It may be a matter of the influence of osmotic activity through the cell membrane or of the peculiar surface forces operating on bodies of the small size of pus-cell granules It appears, however, not to be Brownian movement, and theories basing evidence on this supposition need to be reconsidered

Beaminster R E HOPE SIMPSO

Obituary

GEORGE NOEL BRAHAM

O B E, M C, F R C S E

Professor Braham has died at the age of 56 in Bagdad where he had been living for many years Educated at the Victoria University of Manchester he took his triple qualification in 1909 and the Edinburgh fellowship in 1913 Immediately on the outbreak of the last war he joined up and served through the Mesopotamian campaign where he won the MC and was awarded the OBE After the war he elected to stay on and take a part in building up the new country of Iraq, and of all the Englishmen who shared in this work there was none so popular, nor so esteemed by the Arabs, as George Braham He became chief surgeon to the Anglo Persian Oil Company and returned for a while to practise surgery in Southampton and Gosport, but the desert lured him back to Abadan in Persia

When some fourteen years ago that progressive and far-sighted man, King Feisal, founded the Royal College of Medicine in Bagdad, with a nucleus of British professors assisted by Iraqis, he invited Braham to take the chair of surgery Later Braham operated on the King and received from him the Iraqi order of Al Rafidain A little before trouble broke out in Syria Braham had retired to the Lebanon coast but when hostilities started he was forced to return again to Bagdad He was a skilful diagnostician and an able surgeon and had the invaluable gift of imparting some of his cheerful confidence to his patients so that an impending operation lost much of its terrors He was a delightful companion and a witty raconteur, full of that kindly cynicism peculiar to the observant man of the world, but he never bore anyone ill will Braham had a highly developed if somewhat eclectic literary taste, and he enjoyed nothing more than sitting under the palms in his garden talking about the books of the last century

W P K

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS, MP

The debates on the King's Speech are over and in the two final debates, one on the amendment moved by Mr Greenwood and the other on that moved by the ILP group, the House got down to important principles The ILP with its three members led by Mr Maxton could only muster five supporters because it rather turns away from the world and as Mr Attlee says lives in an ivory tower of dreams But the ILP amendment did at least indicate the right of any minority to be heard, and that is fundamental for the work of our democratic parliament The Speaker is careful to maintain this right so that it sometimes seems that the dissident minority have a greater opportunity of airing their views than the official cohorts of the majority parties Mr Greenwood for the Labour Party and Sir William Jowett for the Government both referred to the need for international security against war as the pre-requisite of the large-scale planning of a better world But Mr Eden made it more definite and did indeed devote more time to foreign policy than either of the two main speakers before him "What will happen when the fighting is over," said Mr Eden, "is that these Great Powers, and particularly ourselves, the United States and Russia, will have a virtual monopoly of armed strength, and that armed strength must be used in the name of the United Nations to prevent a repetition of aggression" But it was essential that the independence of smaller nations should be restored and secured; "in any world system that is to operate all states will have to play their part"

The problem of the immediate relief work in Europe, and elsewhere, which will fall to be done when the Cease Fire sounds, came up for discussion, but only in a preliminary way The original proposal of the meeting of representatives of the United Nations, held at St James s Palace in September 1941, was that a fact-finding committee, with Sir Frederick Leith-Ross as chairman, should assess the needs of the nations of Europe Something seems to have gone amiss with this project No report of the committee has been published, and apparently no report has been submitted to a meeting of representatives of the United Nations, for no meeting has been held since September of last year The programme was upset by the Japanese attack in the East Our own resources of food and materials have been largely used up The responsibility for accumulating new reserves falls on our Dominions and on the USA The recent announcement that Mr Lehman, retiring governor of New York, has been appointed by President Roosevelt to organise American participation in these relief activities has given rise to speculation as to what coördination of relief responsibilities by the United Nations does in fact exist The problem of control and coordination, on the political side evidently needs some reconsideration and Parliament may be expected to turn its attention in this direction in the New Year

The headline sensation of the week was the publication of the Beveridge report The guarantee of financial security for all classes from birth to death has captured the support of a majority of members of all parties The fact that the scheme almost incidentally assures a more or less complete nationalisation of the medical services and institutions is accepted as if it were already an accomplished fact The report as a whole is to be considered in the New Year so that it looks as if Parliament will be very busy laying the foundations of the new world in 1943

FROM THE PRESS GALLERY

Rational Rationing

Speaking on the Government's plans for postwar reconstruction in the debate on the King's Speech on Dec 1, Sir William Jowitt explained the brevity of his remarks on health by saying that the Minister of Health had under active review all the health and hospital services of this country Mr Brown had made one statement not long ago, and in due course he would doubtless have something further to say Sir William confined himself to the question of food policy and nutrition Surely, he claimed, we had learned something about these matters during the war The Ministry of Food had built up an organisation which distributed the nation's food so as to secure the proper feeding of all classes to a degree never before achieved Means had been devised for getting the food to the people in the best condition, in the right proportions, with a minimum of waste and with little regard to the extent or the size of the consumer's income We had acquired what was perhaps more important than any piece of administrative mechanism—a new sense of corporate responsibility We were satisfying the basic needs of even the humblest individual citizen Never before had so much attention been given to the food requirements of mothers and young children as in these war years But thoughtful people asked, "Is it only in a period of war that special priorities are to be provided for workers, mothers, young children and infants? Is it conceivable that what has been done to keep our people in good health and good heart in a period of food shortage shall cease to be done when supplies become abundant again?" Sir William said he could not believe that the wise development which had taken place in the last few years would be abandoned after the war was over

Health of the Colonies

Viscount Cranborne, until recently Secretary of State for the Colonies, made a spirited defence of British administration in the Colonial Empire in a speech in the House of Lords on Dec 3 Education and health, he said, in many ways went together In medicine also we needed the mass attack, and for it we required a trained staff supplied by the Colonial peoples themselves Medical schools were at work in East and West Africa, in Ceylon, Malta and Fiji, turning out doctors Nurses and medical auxiliaries were being trained Hospitals were being constructed or enlarged Investigations of the utmost value were being carried out by our own organisations and by the Rockefeller Foundation. Slowly but steadily the problems of malaria, yellow fever, venereal disease, malnutrition and tuberculosis were being tackled And in this connexion Lord Cranborne paid a tribute to the work of the Colonial Medical Service, who in remote, unhealthy, fever-ridden districts were giving their lives for the welfare of the native populations After education and health the third great need was social and economic security Here again while the war had created difficulties it had speeded up the production of food for local use, and this should have a permanent effect in raising the standard of living in many Colonies It had stimulated action towards greater self-sufficiency in local food supplies and an interest in the development of mixed farming It was to be hoped that the progress made would be consolidated after the war

QUESTION TIME

Medical Inspection of School-children

Mr D L Lipson asked the President of the Board of Education he if would withdraw circular 1604, which recommended the curtailment of medical inspection of children in elementary schools so that there would be no routine medical examination of school children from their entry to school at five years of age until their last year of school life —Mr R A Butler replied The medical man-power position has necessitated the recommendations made in the circular In some areas the staff is insufficient to carry out the full programme of medical inspection Mr Lipson Is the Minister aware that some local authorities believe that regular medical inspection is as necessary in war time as in peace, and have the staffs to do so? Is the intention of the circular that more school medical officers will be called up for military service? Sir Francis Fremantle Is it not a fact that nurses and teachers can exercise extremely good supervision over the children, and that there is probably very little difference in the routine? —Mr Butler There is special reference in the circular to the work that nurses can do, and I hope that they will take the work up It is not the object of the circular to make the service more restricted, but to make the best use of the man-power available I undertake to do my best for the service in war time conditions Mr Lipson Will the Minister undertake to prevent more medical officers being called up? —Mr Butler I have said that I will do my best, but I must donors has been used for serum production for civilian needs In addition there has been a drive to provide pooled serum for the Services and for possible civilian air-raid casualties, as a result there have been 11,397 calls for donors as compared with 2955 in the previous year The laboratory work of testing donors is carried out almost entirely at the Hall Institute of Research The hæmoglobin content of the blood of donors who have repeatedly given blood has been examined, and in a small percentage of 3330 tested the original hæmoglobin level has not been maintained These have been notified and have responded to adequate iron therapy

Royal College of Physicians of Edinburgh

The annual meeting of the college was held on Dec 3 Dr Charles McNeil was re elected president and Dr L H F Thatcher, Dr A Murray Drennan, Dr A Fergus Hewat, Dr D M Lyon, Dr A Graham Ritchie and Dr A Rae Gilchrist were elected to form the council of the college for the ensuing year Dr A Fergus Hewat was nominated vice president

Faculty of Radiologists

The following candidates have satisfied the board at the examination for the fellowship of the faculty —

Radiodiagnosis —G Friedlaender
Radiotherapy —I G Williams

Royal Society of Medicine

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Infectious Disease in England and Wales

WEEK ENDED NOV 28

Notifications —The following cases of infectious were notified during the week smallpox, 0, fever, 2970, whooping-cough, 1263, diphtheria, paratyphoid, 4, typhoid, 13, measles (excluding ella), 10,649, pneumonia (primary or influenzal), 7 puerperal pyrexia, 161, cerebrospinal fever, 77, myelitis, 18, polio-encephalitis, 6, encephalitis argica, 1, dysentery, 163, ophthalmia neonat 82 No case of cholera, plague or typhus fever notified during the week

The number of civilian and service sick in the Infectious of the London County Council on Nov 25 was 1947, scarlet fever, 725, diphtheria, 258, measles, 241, wh cough, 167, enteritis 97, chicken pox, 54, erysipelas, 44 mumps, 38, poliomyelitis, 3, dysentery, 48, cerebrospinal 7, puerperal sepsis, 24, enteric fevers, 8, german measles, 1

Deaths —In 126 great towns there were no deaths enteric fevers, 2 (0) from scarlet fever, 10 (1) from me 13 (2) from whooping-cough, 17 (0) from 36 (5) from diarrhœa and enteritis under two years, 35 (7) from influenza The figures in parentheses are those for London itself

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Births, Marriages and Deaths

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EMOTIONAL AND COGNITIVE CHANGES IN THE POST-TRAUMATIC CONFUSIONAL STATE *

ANDREW PATERSON, M D EDIN, D PSYCH

(*From the Brain Injuries Unit, Edinburgh*)

THE most important function of the human brain is the maintenance of mental activity and conscious behaviour Psychology studies mental processes but has been handicapped because those processes compose a unity, the mental life of the individual, from which it has been impossible to isolate one component and subject it to separate study In certain brain lesions however this complex system of interrelated functions breaks down and the various components disintegrate selectively according to the site of the lesion, Nature herself providing an analysis To study the function of speech one investigates its breakdown and recovery after cerebral lesions In normal speech there is a general background of syntax and grammar this is grossly impaired by lesions in the temporo parietal area of the cortex, and this background is rendered inaccessible for the aphasic patient Lesions of the occipito-parietal area give rise to acalculia, the system of arithmetical principles being inaccessible Lesions somewhere in the region of the third ventricle are liable to disturb the wider background of spatial and temporal relationships The same rule of breakdown and recovery after cerebral lesions applies to the other higher cerebral functions, memory and orientation, perception and imagination, and maintenance of emotional attitudes and stable behaviour patterns

We owe this psychiatric approach to Hughlings Jackson, and its detailed working out in respect of individual mental functions, speech, local spatial orientation and many others to his disciple Henry Head and his successors in that school Jackson's concept of insanity as the pathological dissolution or breakdown of ordinary mental functioning is too often lost sight of in the exuberance of present-day psychopathological theory

We have investigated in detail all our cases of gross confusion arising from any cause, the commonest being severe concussional brain damage In those cases we see the breakdown of conscious activity in its most severe and therefore simplest form We have traced the gradual reinstatement of the various functions which constitute it and have studied the finer defects remaining when the patient has returned to his ordinary routine activity Thus a background of experience is being built up of the course, management and disposal of these cases In the past the psychiatrist has often been called in to see only the end-results in the mental sphere of organic brain damage The patient with impaired cerebral function has by that time become a nuisance to himself to his employers and probably to the neurologist and neurosurgeon His trouble is diagnosed to be one of personality. This is too often conceived of as some ethereal entity having a nature and existence apart from the brain, rather than as the pattern of individual behaviour which the functioning of the brain makes possible Knowledge gained from a study of the course of the post-traumatic psychosis throws light on this difficult syndrome

Goldstein has made extensive studies of the disintegration of mental function after many types of cerebral lesion and has extended the teaching of the *Gestalt* school of psychology to account for many of the phenomena exhibited Symonds [1] has summarised the principles formulated by Goldstein thus

> The essence of every mental event is the formation of a figure which stands out in relief against a background In every thought process there is an active tendency towards such figure formation The tendency is to select from a mass of more or less suitable material those elements which are suitable for the precise figure formation and to reject those elements which are unsuitable The rejected elements form the background As the final result we have the figure standing out in relief against a background of related but irrelevant material As the result of disease, the selective action breaks down The formation of a precise figure is then interfered with by the emergence of loosely related material from the background The attempt at thinking, therefore, can only result in a blurred figure formation

In the confusional state there are restriction of the conscious field and inaccessibility of the background The various stages through which the confused person passes towards recovery consist in the widening of the conscious field and the increasing accessibility of the background, or perhaps of the different types of background Restriction of the conscious field in confusion has been noted by many writers, but its course through the various stages of recovery has not always been traced As the principles of *Gestalt* psychology spring from consideration of the cognitive aspect of conscious experience, and more particularly from visual perception, Goldstein and his followers have tended to interpret confusion in cognitive terms as the blurring of figure and ground I shall try to show however that emotional attitudes involved in all confusional states are distorted in a way analogous to the restriction of the cognitive attitudes and that the interferences in the two fields enhance and reinforce each other

COGNITIVE FEATURES IN THE CONFUSIONAL STATE

CASE 1 —A petty officer, aged 40, was admitted to hospital a week after having fallen 30 ft on to his head There was no fracture of the skull He was grossly disoriented in time and did not recognise that he was in hospital or that the nurses were nurses , he regarded them as his sisters and the doctors as his shipmates His mood was changeable, mainly irritable, querulous and petulant, but at times genial and elated A paraphasic disorder of speech was apparent He was mildly hallucinated, imagining that a mole and a stickleback were in his bed At times he would deny that he was in bed, though lying there When he was asked the name of a silver pencil he stated that it was a cigar Asked what he would do with it, he put it in his mouth and tried to smoke it , he treated the tapered end of the pencil as the end of a cigar To confirm this I lit a match near him and turning towards the light he put the other end of the pencil in the flame and puffed vigorously In this case, the patient saw one aspect or quality of the pencil, namely, that it was long with a tapered end He saw this in isolation from its colour and from the other end which was large and had a clip on it All the qualities of the pencil except the tapered end were somehow suppressed, or at least not active in determining its nature for him We see here one of the most important principles in the breakdown of the conscious process, namely, restriction of the field to one or two characters or qualities and the shutting out of other—perhaps intimately associated—qualities Another example of this process occurred when he complained that a shipmate had on a recent visit committed a serious sexual offence against him Some would regard this allegation as arising from repressed infantile tendencies taking advantage of the man's confused mind Actually the night staff, in spite of vigorous protests, had given him an enema As in the previous example, he failed to see the situation as a whole and appreciated one aspect of it only

CASE 2 —During an interview with a patient who was in a mildly disoriented state after severe confusion, one of the department's therapists wearing a white coat knocked and opened the door The immediate response was " A couple of beers please, miss " The patient had seized on three features of the situation only, the warm day, the bare room and the girl in the white coat, and immediately assumed that he was in a bar, ignoring, for the moment, all evidence to the contrary

The scope of ordinary conscious process goes beyond the main subject of attention, or, in terms of *Gestalt* psychology, the figure Any perceived object owes its significance to a greater or lesser extent to the setting in which it appears For example, given a bone surrounded by flesh and a saw, the observer cannot come to a definite conclusion as to their precise significance When the setting of an operating theatre, post-mortem room or butcher's shop is added, however, this immediately becomes apparent In this case the object isolated from its surroundings, has little meaning , its significance depends on its spatial relationships Although they are not consciously attended to these spatial relationships modify and determine the full meaning of the object donors has been used for serum production for civilian needs In addition there has been a drive to provide pooled serum for the Services and for possible civilian air-raid casualties, as a result there have been 11,397 calls for donors as compared with 2955 in the previous year The laboratory work of testing donors is carried out almost entirely at the Hall Institute of Research The hæmoglobin content of the blood of donors who have repeatedly given blood has been examined, and in a small percentage of 3330 tested the original hæmoglobin level has not been maintained These have been notified and have responded to adequate iron therapy

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* A paper read to the Society of British Neurological Surgeons on Aug 2 1942

[1] Proc R Soc Med 1937 30 1081

Royal College of Physicians of Edinburgh

The annual meeting of the college was held on Dec 3 Dr Charles McNeil was re elected president and Dr L H F Thatcher, Dr A Murray Drennan, Dr A Fergus Hewat, Dr D M Lyon, Dr A Graham Ritchie and Dr. A Rae Gilchrist were elected to form the council of the college for the ensuing year Dr A Fergus Hewat was nominated vice president

Faculty of Radiologists

The following candidates have satisfied the board at the examination for the fellowship of the faculty —

Radiodiagnosis —G Friedlaender
Radiotherapy —I G Williams

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n this case while the emotional balance was apparently estored, there was actually a gross exaggeration of his eeling towards his wife combined with complete absence f that restraint which had previously characterised his ffective behaviour The case illustrates the way in hich the exaggeration of an emotional attitude affects he cognitive ability as expressed in practical judgment wing to a selective restriction on the cognitive side he ailed to appreciate that such a manner of addressing tters conformed neither to his previous standards nor o general usage

During the first few weeks after the return of ordinary onsciousness following a gross confusional state, mental unction though to outward appearance normal remains nstable and easily upset Fatigue and subjection to motional stress both act by bringing about an alteration r restriction of consciousness showing itself in periods f amnesia or fugues inaccessible in the memory of rdinary consciousness, or even in the return of the confusion

Case 6, the soldier who wrote those letters to his wife, illustrates both those factors at work. When discharged, he had to make a long railway journey, and for parts of this journey he has complete amnesia He cannot remember changing trains, though he did so at least twice and with ccess, for he arrived home in average time On two occasions within the first fortnight at home he had a recurrence of his confused condition in which he was disoriented, thought he was in hospital when actually in his own house, and failed to recognise his wife and family These episodes lasted about half an hour, after which ordinary consciousness was restored One of those attacks came on after he had seen an exciting film and the other after a concert They precipitated his transfer to this unit where we were able to observe him

This is only one of several cases where we can be certain that true fugue states can occur in susceptible people ubjected to emotional strain

Alcohol is another potent factor in upsetting mental functioning impaired by severe head injury In the average person it enhances some emotional attitudes at the expense of others and the background of morality and convention tends to be set aside At the same time there is considerable restriction of the cognitive ability With even moderate amounts of alcohol the wrong change is often accepted and the wrong hat donned There is restriction of attention to one aspect only—namely, the shape of the hat and the fact of change being money Here then in the normal person is the beginning of confusion It is not surprising therefore that impairment of mental functions after severe head injury is strikingly exaggerated by even a small amount of alcohol Amnesia may extend over a long period and disorientation is relatively common

The onset of the confusional state may be insidious and show itself in remarkable ways, explicable in terms of change in emotional attitude and restriction of attention such as we have mentioned These may lead to serious involvement of practical judgment

CASE 7 —A woman was admitted to hospital considerably confused and disoriented She had a large basal frontal meningioma and symptoms therefrom had been present for 10 years, attributed to the ever ready diagnosis of change of life The first personality disturbance noted was a shift of affection from her husband to her mother who lived 20 miles away Notwithstanding the distance from home she insisted on visiting her mother daily, thereby seriously neglecting her housework. She stole trifling sums of money from her husband to give as presents to her mother who was in no way in need of them After a year her affection was transferred back to her husband with renewed enthusiasm and he could go nowhere without her Before this change she had been an excellent housekeeper and a stable affectionate wife Interference on the cognitive side was observed when she became muddled in her housekeeping accounts Striking changes developed in her shopping activities When she wanted one quilt she returned home with four, instead of one small kettle she bought two, along with a cauldron costing 17*s* 6*d* On another occasion she bought four blankets all too large for any bed in the house Setting out to buy a suit of underclothing for her husband, she bought two, including long-legged pants of such a size that they overlapped his feet by 6 in She refused to admit her mistake and change them She refused to undress and take a bath, and in spite of a warm summer she wore three pairs of knickers at a time

It is in the realm of practical judgment that the upset due to change in emotional attitude and value together with restriction of the cognitive field is best shown In assessing any practical situation (whether in judging mere size or number, or in the more intricate assessments of the wine connoisseur or the literary critic) where an actual yardstick cannot be at hand, the mental standard is constructed out of a vast amount of previous experience This standard acts as a background which does not appear in consciousness yet determines and makes possible the necessary assessment Everyone of necessity has some such mental yardstick The accuracy and skill with which it is used varies from person to person and from field to field in any one person, and it determines whether he has good practical judgment in that field This intangible yardstick becomes distorted in the presence of exaggerated emotional attitudes and restriction of cognitive attention, and the gross errors in practical judgment follow such distortion

POST-CONCUSSIONAL PERSONALITY CHANGE

The principle of restriction and fixity of cognitive and emotional attitude which we have found important in interpreting confusion in its various forms can also be demonstrated in the personality changes so often found after a severe concussion Two cases of opposing types of temperament illustrate this

CASE 8 —A man, aged 30, received a severe head injury without fracture of the skull He was unconscious for several days and in a state of gross confusion going on to mild confusion for 8 weeks From childhood he had been conventional and timid, afraid of the dark, of water, and later of public opinion As a natural athlete he played football, but avoided positions of danger and games with first-class clubs, giving conventional reasons for this avoidance Timidity in the presence of social superiors was expressed in extreme shyness Because of peculiar family circumstances he felt insecure, though superficially he was friendly and sociable He reached a good average level in clerical work and was conscientious with an eye to promotion On this basis he led a relatively stable existence Six months after his injury his timidity and lack of confidence had become excessive He was extremely embarrassed and ill at ease in the presence of a doctor His speech was evasive and discursive He exhibited nervous mannerisms not previously shown and apologised profusely for imagined social errors He would return on numerous occasions to repeat his apologies He was terrified at the prospect of return to his responsible duties His memory retention was still considerably impaired and he was absent minded Before his head injury the timidity which had been his underlying emotional attitude had been modified and camouflaged by the background of convention (social, educational and athletic) and was scarcely recognisable to the outsider After the injury resulting in basal cerebral atrophy this background ceased to play its modifying part so that timidity, fear and anxiety were strikingly displayed They became fixed and persistent, not merely being called forth by a few situations as before, but characterising all his behaviour

CASE 9 —In this case the picture is reversed After a motor-cycle accident this man was unconscious for 3 days and in a state of confusion for 4 weeks Here the underlying mood had always been one of aggression His upbringing was hard and rigorous His mother died when he was an infant All family arguments were settled by a boxing bout in which he sometimes knocked out his older brothers He was precocious, having his first love affair at 12 At 14 he ran away from home and, giving his age as 18, joined the Army He was ambitious, smart and successful and by 20 had gained considerable promotion On return to civilian life he secured a good appointment On rejoining the Army he received rapid promotion Six months after a severe head injury this man showed no fear whatever, made light of his residual symptoms and wanted to return to work without sick leave He was on a motor cycle as soon as he got out of hospital Prompted by a casual and inoffensive remark he knocked out a colleague He was jovially familiar in his which is perceived The spatial setting therefore acts as a background, without it, true perception of the object would not be possible

Perception of an object is also modified by background in the process of recognition (which incidentally underlies all orientation) Recognition of an object which we have previously seen, either as an individual object or as belonging to a class, involves the presence in some latent way of past experience of that object Such experiences do not necessarily appear in consciousness as memories, but provide a background which plays a part in determining recognition in much the same way as the background of the visual field modifies the nature of the object perceived There are thus at least two kinds of background upon which full appreciation of an object depends—the background of past experience and of present spatial relationships

In the above examples of breakdown of mental activity we find not so much a blurring of figure and background as a severe restriction of the conscious field One of a number of qualities of a single object which are almost essentially related together is singled out to the complete exclusion of the others In a normal person an appreciation of these other qualities would immediately act as corrective clues to the kind of misinterpretation which we find in the confused person

The ability to hold a variety of aspects or qualities together—to appreciate a situation in terms of its characteristic qualities—fluctuates considerably during recovery from confusion When apparently quite well oriented, the patient may revert to perception of partial aspects and to the inadequate orientation which he found satisfactory when those aspects were perceived in isolation There is often a daily fluctuation in orientation So precarious is the patient's grasp of his environment that it is readily upset when the sharp outline and definition of surrounding objects is lost—for example, in the dark In less severe cases of confusion and in various stages of recovery, restriction can still be observed, but not to such an extreme degree

CASE 3—A clerk of 29 sustained a relatively severe concussion, was unconscious for 30 hours and afterwards was acutely confused for 12 hours On admission to hospital, 3 days after his accident, his state was one of puzzlement His orientation was rapidly recovering To all outward appearance ordinary consciousness seemed to have been established, but he had a gross memory retention defect and on the day after admission he failed to recognise the room in which he had been examined the previous day His conversation superficially appeared average though a number of paraphasic errors could be detected Two days after admission this man was sitting talking to visitors, his mother and sister He turned to his mother in conversation for a few seconds, and at the end of it asked "Where is Jeannie ?" though his sister was sitting at his side and had been talking to him a few seconds before While talking to his mother he ceased to be conscious of his sister who formed a background *to* the conversation This incident demonstrates how, as recovery takes place, the influence of the wider field of consciousness returns, in this case he appreciated the full significance of his mother's visit but momentarily ceased to be influenced by his sister's presence The mechanism is similar to that seen in gross confusion but milder in degree It might be interpreted as severe absent mindedness, but his mother judged it to be so unlike his former behaviour as to constitute mental abnormality

CASE 4—In this patient recovery from a severe head injury was almost complete after 8 months and the influence of the background had gradually returned, but mild residual restriction remained which resulted in acts of absent mindedness On 4 occasions this man put salt into his tea instead of sugar He knew there was something the matter with him and was distressed at this performance, not daring to tell his wife in case she should share his fears He even drank the tea in order to hide his mistake

The similarity between ordinary absent-mindedness and confusion is apparent, and the former may be considered as a mild form of the latter The cases described had however never displayed absent-mindedness of such degree before their brain lesions

There are conditions in ordinary human experience in which this restriction of background can be demonstrated An intense interest will temporarily inhibit much of the background Unlike the case of concussional confusion where any part of the may be indiscriminately excluded, here the only of the background which fail to influence are those irrelevant to the main interest The minded professor presents a good example of such restricted field Strong emotion also restricts the of consciousness thereby permitting concentration on relevant details of the situation to which the emotion reaction The irrelevant background of the ment is shut out Love and rage are both popula conceived to be blind We all know the restric perseverative thought of the profoundly depressed p son Restriction of consciousness may go so far in so cases as to produce stupor, or a dream state, consist of a series of images unrelated to any background

EMOTIONAL CHANGES IN THE CONFUSIONAL STATE

Post-concussional confusion also includes much aff tive as well as cognitive disturbance, and there a well-recognised change in mood and emotional at tude In the acute stage of confusion the affect often restricted to a single type of response This called forth by any and every type of stimulus Th is little or no differentiation Such responses especially those of irritability, elation, depression, fe especially when hallucinosis is present, or apathy in the cognitive sphere, so in the emotional life c attitude becomes dominant, even exaggerated, while the other emotional tendencies and responses are abeyance and play no obvious part in modify behaviour

In a normal person, behaviour is the result of a balan between various emotional trends, interests, desir social and moral requirements and restrictions In t confused state the balance is upset, emotional trends isolated and unmodified The inhibitory and restricti influences acquired as a result of social education oft fail to act, giving rise to primitive and excessive respons The restriction of attention to single aspects of situatio reinforces this tendency to the isolated and excessi emotional response Where the environment is n perceived as a whole the response to it will certain appear isolated But the tendency to isolated emotion response also reacts as one might expect on the restricti of the field of attention, just as we have seen that stro emotion in the normal person restricts his attention the object of that emotion Thus a strong desire in t early stage of confusion may determine and restrict t process of reorientation

CASE 5—A man, aged 23, was admitted to hospital in confused state after a severe head injury While still gross confused he thought he was at home and kept calling for wife, who he thought was downstairs When told she was n there he insisted that she must be out shopping, 2 days lat when he appreciated that he was in hospital he shifted orientation to a hospital 5 minutes' walk from his home England and constantly demanded his clothes in order walk home So dominating was the desire to be in or ne his own home that even when his memory and his ability recognise had recovered to an extent which would ha allowed the normal person to have oriented himself perfect well, this man continued to imply in act and in conversati that he was actually in X When challenged he would com promise regarding the difficulty and state that although was in X some people round about him called it a town Scotland or alternatively he said that it might be "classed as in Scotland The disorientation in this case took on delusional status determined by a fixed emotional attitu towards being at home, and cleared up suddenly when h mind was put at rest on receiving a letter from his wife

Even when a patient has apparently recovered from gross post-traumatic confusional state and has adjuste himself satisfactorily to hospital surroundings, emotiona trends may still remain unbalanced and exaggerate and may express themselves in unexpected ways Something more than a superficial talk to such a patien is required to demonstrate any abnormality

CASE 6—A soldier received a severe closed concussiona head injury The period of confusion lasted for 3 weeks, afte which he seemed to recover ordinary consciousness quit rapidly His behaviour conformed to hospital rules and as he was anxious to go home the doctors decided to discharge him

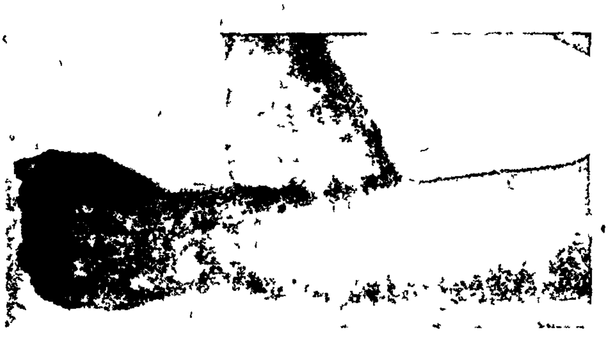


Fig 1—Cutaneous diphtheria multiple lesions secondary to staphylo coccal folliculitis 84 sores were present on the arms from all lesions tested staphylococci and *C diphtheriæ* were obtained

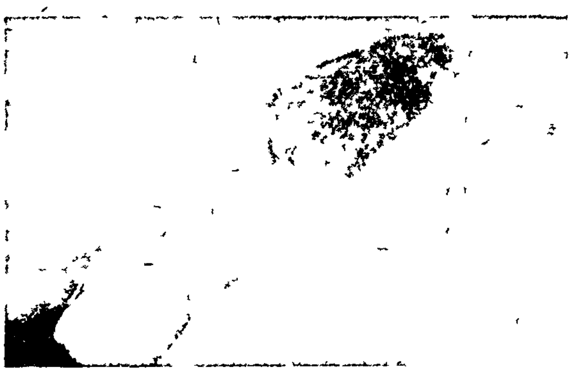


Fig 2—Cutaneous diphtheria secondary to epidermophyton The ulcer *was originally much larger evidence of healing above ulcer*

of skin disease, the commonest associate by far was the desert sore but association was often noted with scratches, insect bites, impetigo, scabies, staphylococcal folliculitis and epidermophyton one case followed typical herpes zoster

Acute cutaneous diphtheria—The acute sore was found both on unbroken skin and at sites of previous trauma The association with diphtheria of nose or throat probably explained why the sore was so often found on unabraded skin of the radial aspect of forearm and dorsum of hand, it was doubtless the result of direct transference through nose-wiping on the part The first clinical sign in such cases was a small blister of pustule centred around a hair follicle, after rupture a flat shallow sore developed with base almost flush with skin and edge composed of skin only—no rolled bluish edge as in the chronic type The base appeared more healthy than in the chronic type and in the absence of mixed infection yielded a pure growth of *Corynebacterium diphtheriæ* In one case aspiration of the pustule before it ruptured gave a similar pure growth Where a pre-existing sore became acutely infected there was no preceding blister but the blackish membrane developed rapidly Size, shape and depth varied with the antecedent lesion

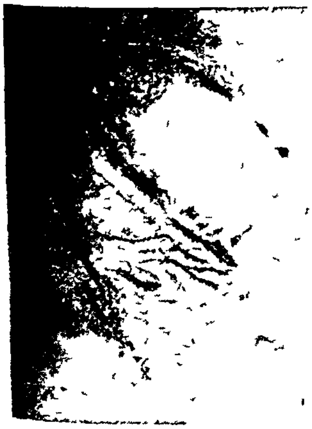


Fig 3—Cutaneous diphtheria chronic ulcer on inner aspect of right thigh with acute contact infection of unabraded skin of scrotum

One case of this type calls for special mention The initial lesion was a mosquito bite of the right upper eyelid This broke down and spread along the lid giving a typical acute sore of the linear type, conjunctivitis was also present Swabs from both sources and also from the nose and throat were positive for *C diphtheriæ* The patient later developed polyneuritis, 80,000 units of diphtheria antitoxin was given in treatment over the first two days of the disease because of extreme systemic disturbance The conjunctivitis was non-membranous

Chronic cutaneous diphtheria—The sores were more commonly seen in their chronic or indolent stage Almost invariably multiple, they were usually found on the elbows, forearms and backs of the hands, the knees, legs and ankles

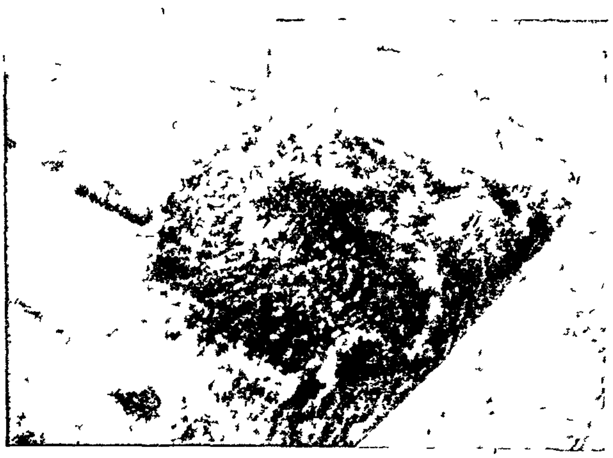
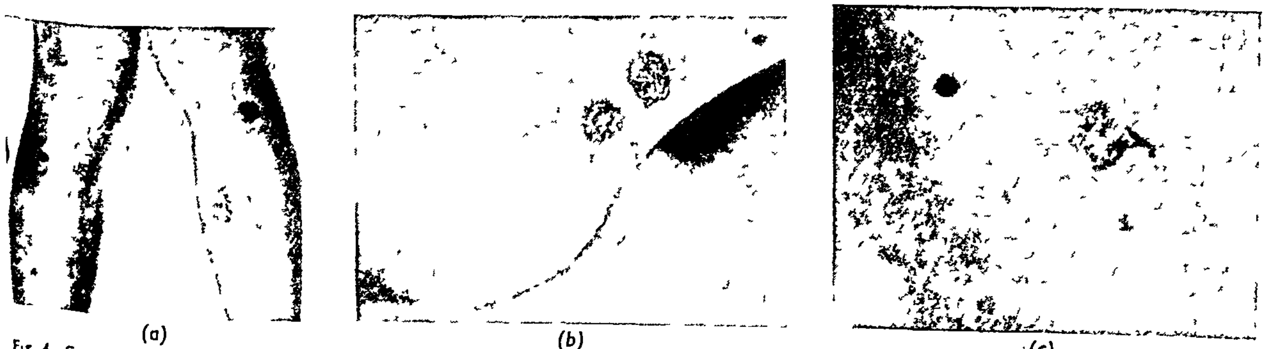


Fig 5—Desert sore on dorsum of left hand staphylococcal infection note irregular outline and absence of depth and rolled raised edge

In one patient who had suffered from sores for some two months there were present in a healed or indolent stage 84 lesions on the arms alone (fig 1) Originally small staphylo coccal lesions, the majority yielded positive swabs This case was erroneously described by Manson Bahr (1941) as acute cutaneous diphtheria

The chronic sore was usually circular or oval, occasionally linear in an infected scratch Punched out and clear-cut, it varied in width from a ½ to as much as 2 in



(a) (b) (c)

Fig 4—Cutaneous diphtheria chronic type note regular circular or oval shape punched out appearance raised rolled edge and deep base covered by leather like black membrane (a) and (b) followed insect bites (c) followed traumatic sores on knee and shows the stage of healing

social attitude He treated superior officers as equals and asked a ward sister her age as an opening remark in conversation His farewell salutation to his doctors was "Cheerio, okey doke" The previous underlying emotional attitude was one of aggression and euphoria, but modified by the back ground of Army life and general experience he became a *smart, ambitious, disciplined NCO* He had been entrusted with the responsibility of training soldiers and proper respect and deference towards his superior officers had become automatic After a head injury resulting in basal frontal atrophy, the aggressive euphoric attitude unmasked was dominant and persistent, appearing in inappropriate situations no longer modified by those influences and standards which previously had successfully guided them into useful channels

In these two cases, which are representative of many others, we see what might be called the caricature effect of severe concussional head injury The caricature is obvious, the background of conventional, social and other standards having been cut off, the basic emotional trends are allowed to dominate the field and the future course of the patient's life Air encephalography in both cases and in many similar cases showed basal frontal atrophy

In these cases of the post-concussional syndrome mild residual personality changes are present, interpretable in terms of first, the previous personality pattern in all its ramifications and second, the change in certain of its component emotional attitudes as the direct result of brain damage Supposing however that those two cases exemplifying the end-result of a serious head injury were examined a year later by someone who did not know the course of the post-traumatic psychosis in either case, or the changes in emotional attitude immediately following it, what would be the assessment? The man with the change towards more aggression would be *relatively* easily assessed His present personality picture could be contrasted with his personality before the accident and the difference would almost certainly be regarded as an organic personality change attributable to the brain injury But in the case of the change to excess fear, anxiety and apprehension, the matter is quite different As emotional attitudes, fear and aggression are equivalent, but in the eyes of the general public, and rightly so, there appears something to be gained out of fear and anxiety and the maintenance of that reaction In war-time it may be the avoidance of service which might be dangerous or in peace-time the making of excessive insurance claims It is in this type of case, and they are constantly recurring, where there is nothing *in the symptoms themselves to distinguish the* exaggerated fears and anxieties of the organic personality change from those so often found in the neurotic, that a knowledge of the course of the post-confusional state is essential This cannot be given by the patient himself and is rarely recorded by his medical attendant in sufficient detail to be helpful The importance and the practical value of the study of the post-traumatic psychosis in all its stages are therefore obvious

SUMMARY

Conscious activity comprises many different functions which must all be present before behaviour can be said to be normal They can be knocked out selectively by the various types of brain lesion

The knocking out of any one of those functions resolves itself into a restriction of the background specific to that function It is on the proper activity of this background that the function itself depends

We have studied and analysed the behaviour of people with brain injuries in the light of this principle, looking especially for selective breakdown in various fields, and have found that restriction of conscious activity *to a few aspects only of a* situation and to isolated emotional attitudes are common in such cases, 9 of which are reported here

I wish to acknowledge the wise guidance of Prof D K Henderson and Mr Norman Dott, the directors of this unit My thanks are also due to Brigadier George Riddoch and Air Commodore C P Symonds for advice and criticism, and Dr William McAlister, medical superintendent of this hospital, for access to patients The work has been made possible by the support of the Rockefeller Foundation and the University of Edinburgh

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CUTANEOUS DIPHTHERIA IN NORTHERN PALESTINE

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IN military operations in the Middle East during last war, affections of the skin were a common cause temporary inefficiency among the troops Large numbers of men are again stationed in the same areas, an skin affections are again a major problem One of th more common of these cutaneous affections, and on which caused considerable disability in the last war, i that known as desert sore, veldt sore or Barcoo rot Working in the Sinai Peninsula, Craig (1919) found tha in 67 5% of his cases of such sores the Klebs Loffle bacillus could be isolated The virulence of thes organisms was not determined While not suggestin that all veldt sores are diphtherial in origin, Manson Bahr (1941) points out that in a certain proportion th æetiology must be taken as established Benste (1936) published an account of an outbreak of diphther among British troops on the North-West Frontier I his 46 cases there were 31 of cutaneous diphtheria, th ulcers being situated mainly on the knees hands an arms, *5 cases showed* postdiphtheritic paresis, 3 *of* th cutaneous and 2 of the faucial type Good results wer obtained with antitoxin The whole battalion in whic the outbreak occurred was Schick-tested and those positive (27%) were treated by at least two prophylacti injections Hamburger (1939, 1940) found virulent Klebs-Loffler bacilli in over 3% of the cases of "so calle frontier sore" which he investigated in India

In an outbreak of diphtheria in Northern Palestine reported by Cameron (1942), a large number of cases o cutaneous infection were noted The unit showing the highest incidence of affection was a British Yeomanry one which had been stationed in Northern Palestine since arrival in the Middle East During June-August, 1940, faucial diphtheria broke out in the unit, 12 cases being admitted to No 61 General Hospital A carrier was found and after his isolation and treatment the outbreak seemed to die down Before this outbreak, sores had been noted but they did not seem to be more numerous than in other regiments similarly situated, nor to take longer to respond to the usual local treatments After the faucial diphtheria outbreak the sores continued to be prevalent, but now many of them proved resistant to treatment—indeed seemed to retrogress despite it—and in several deep indolent ulcers developed, 4 of these cases were seen in the same hospital in September, when the unhealthy appearance of the granulating base and the rolled edge suggested the possibility of a diphtheritic infection Swabs and scrapings were therefore taken from the bases of the ulcers after removal of the overlying scabs and these showed the presence of Klebs-Loffler bacilli Other cases of apparently similar skin lesions in the unit were examined and 15 further cases were scraped, yielding 10 positive results Later further cases were admitted from this and other units The condition was found to be prevalent in all parts of Palestine but was especially common in the north

The total number of cases of cutaneous diphtheria from September to December, 1940, was 66 Over this period other types of diphtheria were developing in the same units An analysis of the outbreak showed nasal diphtheria 26, faucial diphtheria 79, cutaneous diphtheria 66 cases, and carriers 78 All cases of cutaneous lesions underwent routine swabbing of nose and throat Of the 66 cases, 42 were unassociated with positive findings elsewhere, while the remaining 24 showed the following lesions faucial diphtheria 8, nasal diphtheria 4, nasal and faucial diphtheria 3, carriers 10 (nose 3, throat 4, both 3)

THE SKIN LESIONS

Cutaneous diphtheria was encountered in two forms, acute and chronic The acute form was always associated with a positive lesion of the throat, or more commonly the nose The chronic form was invariably superimposed on a skin lesion, which might be any form

NATURE OF PARALYSIS IN 12 CASES

Case	Cutaneous lesion	Dose of ADS units	Loss		Paralysis			Circulatory disturbance	Polyneuritis	Muscles affected
			Sensory	Reflex	Palatal	Accommodation	Facial			
1	Legs and fingers (carrier)	24,000	+	+	+	—	—	—	+	R trapezius, serratus, quadriceps, gastrocnemius tibialis ant L quadriceps, gastrocnemius, tibialis ant
2	R. hand acute (nasal diph)	16,000	—	+	+	—	+	+	+	P abdominals, recti and laterals, gastrocnemius L abdominals, recti, ilcopsoas, gastrocnemius, tibialis ant
3	Toe, acute (nasal diph)	40,000	+	+	—	—		—	+	Left sided paralysis with hemiplegic distribution of lower neurone type
4	Feet (carrier)	20,000	—	+	—	—		—	+	Arms free, bilateral quadriceps weakness
5	Legs and arms	20,000	—	—	—	+		—	—	No demonstrable motor weakness except of accommodation
6	Heel	22,000	—	+	—			—	—	Reflex loss with no demonstrable motor weakness
7	Hands and knees	24,000	+	+	—			—	+	Lower limb weakness especially in both quadriceps
8	Arms	20,000	+	+	—			—	—	No demonstrable motor loss, deep reflexes absent on both sides
9	L ankle P leg	20,000	+	+					+	Weakness in left forearm and both lower limbs notably quadriceps
10	Foot (epidermophyton)	32,000	+	+	—			—	+	All muscles of lower limbs with quadriceps + + +
11	Forearm, nose, throat ear	32 000	+	—	—			—	—	Sensory only
12	R. upper eyelid, conjunctivitis (nose and throat diph)	80,000	+	+					+	P gluteus maximus and medius, quadriceps, hamstrings, gastrocnemius, tibialis ant, peroneus longus, toe flexors L As for right with peroneus brevis in addition

common in the Middle East and take considerably longer to heal than at home The climate, excessive exposure of skin to sun, the lack of fresh fruit at certain seasons, the increased tendency to abrasions in certain occupations such as grooming, the difficulty of keeping scratches and bites covered, clean and moist, and the attacks of insects all play their part Consequently any factor which raises the patient's resistance to infection is important Though the suggestion of vitamin-C lack was not supported by intradermal dichlorphenolindophenol tests carried out on a number of the cases and though there were no clinical evidences of other vitamin deficiencies all cases were placed on a diet of high vitamin content To maintain resistance also a high protein intake was given Sodium chloride intake was also high. No vitamin preparations were used other than routine 'Marmite' The chronic sore should be treated in bed with the part immobile as far as possible

In view of the chance of paralysis, diphtheria antitoxin was given to all cases Since no controls were used it cannot be said whether this assisted healing In some cases, however, antitoxin treatment was delayed for some time pending positive diagnosis The general impression in these cases was that healing was more rapid after the injection than before A minimum dose of 20 000 units was given in all instances In view of the high incidence of paralysis it is debatable if the high dosage method of Bie (1940) would not have been justified Probably the long duration of the condition before treatment, with resultant fixation of toxin, would have made even such large doses ineffective Apart from that, antitoxin was not available in such amounts, and in any case such a high incidence of paralysis was never anticipated Antitoxin was given intramuscularly in most cases Manson-Bahr (1941) advises the use of antitoxin (dose 4000 units) in all cases of chronic desert sore and suggests that it should be given subcutaneously around the sore This method was practised in a few cases with multiple sores, but larger doses (20,000 units) were injected No beneficial result was noted from this method; the injected sores did not heal quicker than those, on the same patient, left uninjected Swabs soaked in antitoxin were employed as dressings on some sores in patients with multiple affection. Again no beneficial effect was observed. In these cases the intramuscular injection was also given

Oral sulphanilamide and sulphapyridine were given to some cases without apparent benefit In one case fresh sores appeared while he was under treatment with sulphapyridine Vaccine therapy was given a trial in staphylococcal cases as noted above

The essentials of local treatment are that the sore should be cleaned, extensions to hair follicles with formation of satellite sores should be prevented, and healing should be stimulated and reinfection opposed The sores were commonly in a dried, dirty condition when first seen, with scab or slough covering the base The initial dressings should aim at removing the slough and cleaning the base For this purpose hot fomentations, applications of magnesium sulphate in glycerin, compresses of hypertonic saline or sodium sulphate and hydrogen peroxide were all suitable measures The surrounding hairs were removed and care was taken to prevent the dressings overlapping to allow discharge from the sore to flow over and infect the surrounding skin A dressing cut to fit into the sore is an important point in treatment Once the sore is reasonably clean there are two possible lines of treatment It may be covered with plaster or strapping and left for several days or weeks This has the advantages that the dressings are not frequently pulled off with damage to granulations, and that reinfection is prevented But not all skins will tolerate strapping Where the sore is small, applications of the silver nitrate stick or painting with 10% silver nitrate solution will produce a black slough beneath which healing can take place Both methods were practised with some success In general the best results were obtained by the use of dressings which did not stick to the sore Cod-liver oil dressings under jaconette for three days, followed by the application of scarlet red ointment for a similar period was the treatment most used In the later stages all of the aniline dyes were used and proved efficacious Sulphanilamide and sulphapyridine were used locally in some cases, but the rate of healing of sores so treated showed no improvement on that of control sores in the same patient treated by the above methods

It is unwise to bind oneself to one form of treatment, whatever is done, any large diphtheritic sore is likely to take 3–4 weeks to heal

We wish to thank Colonel D Stewart and his staff, Colonel J Higgins and his staff, especially Lieut -Colonel C R Christian, Major S Cowan and Major R D Mackenzie for their help with the pathology studies, the commanding officers and regimental medical officers of the regiments involved, and Captain E L Manton for the photographs

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The edges were hard, raised and rolled, with a pale bluish tinge, and the base was flat and even In many it was covered with a leather-like, dark scab membrane beneath which was unhealthy pus-containing anæmic granulation tissue From time to time this scabbed-over appearance suggested healing but only to bring disillusionment when once again pus appeared beneath the scab Manson-Bahr (1941) records a case where the ulcer had been present for 2 years Enlargement of the regional lymph-nodes was not common in the absence of acute pyogenic infection Many of these sores appeared to originate in insect bites or wounds that had become infected In one case where the patient had an ulcer with a positive smear between the third and fourth toes, a epidermophytic origin seemed probable (fig 2)

Acute and chronic sores may be encountered in the same patient, the acute lesion usually being a contact infection of healthy skin from the chronic This was well illustrated in a patient with multiple chronic sores who developed a positive acute ulcer on the right side of the scrotum exactly opposite a lesion on the right thigh (fig 3) The healed acute sore left little change in the part The chronic sore left a scar which was usually thin, glossy, brownish pigmented and slightly depressed There was no recovery of hair or sweat glands in the scarred part

DIAGNOSIS

An acute diphtheritic infection of the skin may be suspected when blister sores appear on the forearm or hand of patients suffering from active nasal or faucial diphtheria, or where, in such a case, a pre-existing skin lesion in any part of the body becomes obviously exacerbated and develops a yellowish membrane or dark leathery slough The diagnosis can only be proved by finding the *C diphtheriæ* and establishing its virulence

The chronic diphtheritic sore has clinical features which distinguish it from the commoner desert sore It is oval or circular, the edge is raised, rolled and bluish while the base is deep and may show the leathery membrane slough beneath which are pus and unhealthy granulations (fig 4, a, b and c), whereas the desert sore is more irregular in shape, lacks the raised rolled edge, and is shallow, its healthier looking base is covered only by a thin dry light-brown scab of sero-pus which often entangles the surrounding hairs (fig 5) The punched-out appearance of the diphtheritic sore and absence of healing may suggest a syphilitic ulcer but this is easily excluded by the specific tests In areas where it occurs, cutaneous leishmaniasis may strongly resemble the diphtheritic ulcer Examination for the Leishman-Donovan bodies in the fluid removed from around the margin of the ulcer will help to establish the diagnosis

As in the case of the acute sore the diagnosis of the chronic diphtheritic ulcer can only be definitely established by bacteriological findings, though with experience a correct clinical diagnosis can be made in a large proportion of cases Careful preparations are needed before taking a smear The slough membrane must be removed, after which the sore should be treated with a saline dressing, kept moist for at least 24 hours The sore should be freed as far as possible from antiseptic influence The smear should be taken by scraping the surface of the sore and especially under the margins with a spoon or platinum loop, the customary cotton-wool swab being much less likely to give positive results Direct transference to the Loffler medium is desirable One negative finding should not upset a clinical diagnosis In an outpatient, a spirit swab applied for half an hour may be used in place of the saline dressing

BACTERIOLOGY

In the present series no case was diagnosed as diphtheria without bacteriological verification In most of the early smears morphology and fermentation tests were regarded as sufficient evidence Wherever doubt existed growth on Morgan and Marshall tellurite medium was employed for verification Later when sufficient tellurite was available this was a routine By this means a large number of cases with diphtheria-like organisms were excluded from the series, diphtheroids abound in skin sores, and often full bacteriological evidence is necessary before a diagnosis of cutaneous diphtheria can be established

Virulence tests were carried out on 11 cases taken at random from those in hospital, of these, 8 were reported virulent, while 1 of those reported avirulent later veloped polyneuritis In this case no focus of di other than cutaneous was found A second case multiple infection (nose, throat and skin), though ported avirulent, later developed paralysis The vi lence test employed initially was of the intradermal but in later tests intraperitoneal injection was car out with a full autopsy of the animal after death T nose and fauces were repeatedly swabbed in all ca Nasal as well as faucial swabbing should be routine in cases of diphtheria, especially cutaneous.

In a large number of cases a staphylococcal les provided the basis of the diphtheritic sore Th staphylococcal lesions were invariably multiple a included cases of folliculitis, boils and desert sores, staphylococcus being the commonest organism associat with this last In nearly all these cases *Staphylococ aureus* of similar type to the skin infection was found the nose The coagulase test was employed by Major Cowan to establish the virulence of these organis The number of positive results justifies the suggest that a large number of skin infections with staphyloco are of nasal origin and that in such cases a staphylococ vaccine may be of therapeutic value

The diphtheritic infection was thought to have source in the native population This point is discuss elsewhere (Cameron 1942) The horse is exonerated a source of infection, bacteriological examinations horse nasal and salivary swabs, hair, curry-combings, d and wet manure and forage were all negative Cr (1916) ascribed the sores to horses bedded in dr manure, Bensted (1936) reported positive findings in t forage used on the North-West Frontier It is intere ing that much of the forage used in Palestine, includi that tested, was of Indian origin

PROGNOSIS

In all instances the acute sores healed rapidly T chronic sores were remarkably indolent, none heal in under a fortnight after coming under hospital trea ment, over a month was more usual Most of the chronic sores had been under treatment for at least month before admission, one case had had unheal sores for 8 months

Paralyses developed in 12 of the 66 cases 2 were cases of cutaneous diphtheria in carriers, 2 cases we associated with nasal diphtheria with the acute type cutaneous sores, 2 were associated with both nasal a faucial diphtheria, in 5 no focus of diphtheria other tha the skin could be found Of the 66 cases, 42 were u associated with diphtheria elsewhere, of this numb 5 cases developed paralyses Palatal paralysis was foun in one case associated with nasal diphtheria and in patient who was also a carrier, 1 case associated wit nasal infection showed facial paralysis and 1 showe accommodation loss Circulatory failure was prese in 1 case of nasal and acute cutaneous diphtheri Bensted (1936) reported 3 cases of paralysis in 31 cas of cutaneous diphtheria, Walshe (1918) also noted it association with cutaneous lesions Apart from thes records, the association of paralysis with skin diphthe does not appear to have been emphasised The hig percentage incidence makes careful antidiphtheriti treatment necessary, as in the faucial cases, it is to often unavoidably delayed until the toxin has becom firmly fixed Sensory symptoms were manifest in th vast majority of the cases of diphtheria of all types, an are therefore not included in the above analysis Th table gives detailed analysis of the paralysis encountere Points of note are the predominant affection of the low limbs and the remarkable symmetry of the muscle involved In all but one of the cases the paralysis wa a late development after the sores had healed Th longest interval after initial treatment was 149 days

TREATMENT

The acute ulcer required little treatment beyond th of the major causal condition and bland moist dressing to the sore The presence of such a sore did not indicat need for any change in dosage of antidiphtheritic serum the dose of which should be suited to the nasal or fauci lesion

Treatment of the chronic ulcer fell under two heads— general and local Cutaneous lesions are undoubtedly

NATURE OF PARALYSIS IN 12 CASES

Case	Cutaneous lesion	Dose of ADS units	Loss		Paralysis			Circulatory disturbance	Polyneuritis	Muscles affected
			Sensory	Reflex	Palatal	Accommodation	Facial			
1	Legs and fingers (carrier)	24,000	+	+	+	—	—	—	+	R. trapezius serratus quadriceps, gastrocnemius tibialis ant. L quadriceps gastrocnemius, tibialis ant
2	R hand acute (nasal diph)	16,000	—	+	+	—	+	+	+	R abdominals, recti and laterals gastrocnemius L abdominals recti , ileop-oas , gastrocnemius tibialis ant
3	Toe, acute (nasal diph)	40,000	+	+	—	—		—	+	Left sided paralysis with hemiplegic distribution of lower neurone type
4	Feet (carrier)	20 000	—	+	—	—		—	+	Arms free , bilateral quadriceps weakness
5	Legs and arms	20 000	—	—	—	+		—	—	No demonstrable motor weakness except of accommodation
6	Heel	22,000	—	+	—			—	—	Reflex loss with no demonstrable motor weakness
7	Hands and knees	24,000	+	+	—			—	+	Lower limb weakness especially in both quadriceps
8	Arms	20,000	+	+	—			—	—	No demonstrable motor loss , deep reflexes absent on both sides
9	L ankle R leg	20,000	+	+					+	Weakness in left forearm and both lower limbs notably quadriceps
10	Foot (epidermophyton)	32,000	+	+	—			—	+	All muscles of lower limbs with quadriceps + + +
11	Forearm, nose, throat ear	32,000	+	—	—			—	—	Sensory only
12	R. upper eyelid con junctivitis (nose and throat diph)	80 000	+	+					+	R. gluteus maximus and medius quadriceps, hamstrings, gastrocnemius tibialis ant , peroneus longus toe flexors L As for right with peroneus brevis in addition

common in the Middle East and take considerably longer to heal than at home The climate, excessive exposure of skin to sun, the lack of fresh fruit at certain seasons, the increased tendency to abrasions in certain occupations such as grooming, the difficulty of keeping scratches and bites covered, clean and moist and the attacks of insects all play their part Consequently any factor which raises the patient's resistance to infection is important Though the suggestion of vitamin-C lack was not supported by intradermal dichlorphenolindophenol tests carried out on a number of the cases and though there were no clinical evidences of other vitamin deficiencies all cases were placed on a diet of high vitamin content To maintain resistance also a high protein intake was given Sodium chloride intake was also high No vitamin preparations were used other than routine 'Marmite' The chronic sore should be treated in bed with the part immobile as far as possible

In view of the chance of paralysis, diphtheria antitoxin was given to all cases Since no controls were used it cannot be said whether this assisted healing In some cases, however, antitoxin treatment was delayed for some time pending positive diagnosis The general impression in these cases was that healing was more rapid after the injection than before. A minimum dose of 20 000 units was given in all instances In view of the high incidence of paralysis it is debatable if the high dosage method of Bie (1940) would not have been justified Probably the long duration of the condition before treatment, with resultant fixation of toxin, would have made even such large doses ineffective Apart from that, antitoxin was not available in such amounts, and in any case such a high incidence of paralysis was never anticipated Antitoxin was given intramuscularly in most cases Manson-Bahr (1941) advises the use of antitoxin (dose 4000 units) in all cases of chronic desert sore and suggests that it should be given subcutaneously around the sore This method was practised in a few cases with multiple sores, but larger doses (20,000 units) were injected No beneficial result was noted from this method , the injected sores did not heal quicker than those, on the same patient, left uninjected Swabs soaked in antitoxin were employed as dressings on some sores in patients with multiple affection Again no beneficial effect was observed In these cases the intramuscular injection was also given

Oral sulphanilamide and sulphapyridine were given to some cases without apparent benefit In one case fresh sores appeared while he was under treatment with sulphapyridine Vaccine therapy was given a trial in staphylococcal cases, as noted above

The essentials of local treatment are that the sore should be cleaned, extensions to hair follicles with formation of satellite sores should be prevented and healing should be stimulated and reinfection opposed The sores were commonly in a dried, dirty condition when first seen, with scab or slough covering the base The initial dressings should aim at removing the slough and cleaning the base For this purpose hot fomentations, applications of magnesium sulphate in glycerin, compresses of hypertonic saline or sodium sulphate and hydrogen peroxide were all suitable measures The surrounding hairs were removed and care was taken to prevent the dressings overlapping to allow discharge from the sore to flow over and infect the surrounding skin A dressing cut to fit into the sore is an important point in treatment Once the sore is reasonably clean there are two possible lines of treatment It may be covered with plaster or strapping and left for several days or weeks This has the advantages that the dressings are not frequently pulled off with damage to granulations, and that reinfection is prevented But not all skins will tolerate strapping Where the sore is small applications of the silver nitrate stick or painting with 10% silver nitrate solution will produce a black slough beneath which healing can take place Both methods were practised with some success In general the best results were obtained by the use of dressings which did not stick to the sore Cod-liver oil dressings under jaconette for three days, followed by the application of scarlet red ointment for a similar period was the treatment most used In the later stages all of the aniline dyes were used and proved efficacious Sulphanilamide and sulphapyridine were used locally in some cases, but the rate of healing of sores so treated showed no improvement on that of control sores in the same patient treated by the above methods

It is unwise to bind oneself to one form of treatment , whatever is done, any large diphtheritic sore is likely to take 3–4 weeks to heal

We wish to thank Colonel D Stewart and his staff, Colonel J. Higgins and his staff, especially Lieut -Colonel C R Christian, Major S Cowan and Major R D Mackenzie for their help with the pathology studies , the commanding officers and regimental medical officers of the regiments involved , and Captain E L Manton for the photographs

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The edges were hard, raised and rolled, with a pale bluish tinge, and the base was flat and even In many it was covered with a leather-like, dark scab membrane beneath which was unhealthy pus-containing anæmic granulation tissue From time to time this scabbed-over appearance suggested healing, but only to bring disillusionment when once again pus appeared beneath the scab Manson-Bahr (1941) records a case where the ulcer had been present for 2 years Enlargement of the regional lymph-nodes was not common in the absence of acute pyogenic infection Many of these sores appeared to originate in insect bites or wounds that had become infected In one case where the patient had an ulcer with a positive smear between the third and fourth toes, a epidermophytic origin seemed probable (fig 2)

Acute and chronic sores may be encountered in the same patient, the acute lesion usually being a contact infection of healthy skin from the chronic This was well illustrated in a patient with multiple chronic sores who developed a positive acute ulcer on the right side of the scrotum exactly opposite a lesion on the right thigh (fig 3) The healed acute sore left little change in the part The chronic sore left a scar which was usually thin, glossy, brownish pigmented and slightly depressed There was no recovery of hair or sweat glands in the scarred part

DIAGNOSIS

An acute diphtheritic infection of the skin may be suspected when blister sores appear on the forearm or hand of patients suffering from active nasal or faucial diphtheria, or where, in such a case, a pre-existing skin lesion in any part of the body becomes obviously exacerbated and develops a yellowish membrane or dark leathery slough The diagnosis can only be proved by finding the *C diphtheria* and establishing its virulence

The chronic diphtheritic sore has clinical features which distinguish it from the commoner desert sore It is oval or circular, the edge is raised, rolled and bluish while the base is deep and may show the leathery membrane slough beneath which are pus and unhealthy granulations (fig 4, a, b and c), whereas the desert sore is more irregular in shape, lacks the raised rolled edge, and is shallow, its healthier looking base is covered only by a thin dry light-brown scab of sero-pus which often entangles the surrounding hairs (fig 5) The punched-out appearance of the diphtheritic sore and absence of healing may suggest a syphilitic ulcer but this is easily excluded by the specific tests In areas where it occurs, cutaneous leishmaniasis may strongly resemble the diphtheritic ulcer Examination for the Leishman-Donovan bodies in the fluid removed from around the margin of the ulcer will help to establish the diagnosis

As in the case of the acute sore the diagnosis of the chronic diphtheritic ulcer can only be definitely established by bacteriological findings, though with experience a correct clinical diagnosis can be made in a large proportion of cases Careful preparations are needed before taking a smear The slough membrane must be removed, after which the sore should be treated with a saline dressing, kept moist for at least 24 hours The sore should be freed as far as possible from antiseptic influence The smear should be taken by scraping the surface of the sore and especially under the margins with a spoon or platinum loop, the customary cotton-wool swab being much less likely to give positive results Direct transference to the Loffler medium is desirable One negative finding should not upset a clinical diagnosis In an outpatient, a spirit swab applied for half an hour may be used in place of the saline dressing

BACTERIOLOGY

In the present series no case was diagnosed as diphtheria without bacteriological verification In most of the early smears morphology and fermentation tests were regarded as sufficient evidence Wherever doubt existed growth on Morgan and Marshall tellurite medium was employed for verification Later when sufficient tellurite was available this was a routine By this means a large number of cases with diphtheria-like organisms were excluded from the series, diphtheroids abound in skin sores, and often full bacteriological evidence is necessary before a diagnosis of cutaneous diphtheria can be established

Virulence tests were carried out on 11 cases taken at random from those in hospital, of these, 8 were reported virulent, while 1 of those reported avirulent later d veloped polyneuritis In this case no focus of diphthe other than cutaneous was found A second case wit multiple infection (nose, throat and skin), though reported avirulent, later developed paralysis The virulence test employed initially was of the intradermal type but in later tests intraperitoneal injection was carried out with a full autopsy of the animal after death The nose and fauces were repeatedly swabbed in all cases Nasal as well as faucial swabbing should be routine in all cases of diphtheria, especially cutaneous

In a large number of cases a staphylococcal lesion provided the basis of the diphtheritic sore These staphylococcal lesions were invariably multiple and included cases of folliculitis, boils and desert sores, the staphylococcus being the commonest organism associated with this last In nearly all these cases *Staphylococcus aureus* of similar type to the skin infection was found in the nose The coagulase test was employed by Major S Cowan to establish the virulence of these organisms The number of positive results justifies the suggestion that a large number of skin infections with staphylococci are of nasal origin and that in such cases a staphylococcal vaccine may be of therapeutic value

The diphtheritic infection was thought to have its source in the native population This point is discussed elsewhere (Cameron 1942) The horse is exonerated as a source of infection, bacteriological examinations of horse nasal and salivary swabs, hair, curry-combings, dry and wet manure and forage were all negative Craig (1916) ascribed the sores to horses bedded in dried manure, Bensted (1936) reported positive findings in the forage used on the North-West Frontier It is interesting that much of the forage used in Palestine, including that tested, was of Indian origin

PROGNOSIS

In all instances the acute sores healed rapidly The chronic sores were remarkably indolent, none healed in under a fortnight after coming under hospital treatment, over a month was more usual Most of these chronic sores had been under treatment for at least a month before admission, one case had had unhealed sores for 8 months

Paralyses developed in 12 of the 66 cases 2 were in cases of cutaneous diphtheria in carriers, 2 cases were associated with nasal diphtheria with the acute type of cutaneous sores, 2 were associated with both nasal and faucial diphtheria, in 5 no focus of diphtheria other than the skin could be found Of the 66 cases, 42 were unassociated with diphtheria elsewhere, of this number 5 cases developed paralyses Palatal paralysis was found in one case associated with nasal diphtheria and in 1 patient who was also a carrier, 1 case associated with nasal infection showed facial paralysis and 1 showed accommodation loss Circulatory failure was present in 1 case of nasal and acute cutaneous diphtheria Bensted (1936) reported 3 cases of paralysis in 31 cases of cutaneous diphtheria, Walshe (1918) also noted it in association with cutaneous lesions Apart from these records, the association of paralysis with skin diphtheria does not appear to have been emphasised The high percentage incidence makes careful antidiphtheritic treatment necessary, as in the faucial cases, it is too often unavoidably delayed until the toxin has become firmly fixed Sensory symptoms were manifest in the vast majority of the cases of diphtheria of all types, and are therefore not included in the above analysis The table gives detailed analysis of the paralysis encountered Points of note are the predominant affection of the lower limbs and the remarkable symmetry of the muscles involved In all but one of the cases the paralysis was a late development after the sores had healed The longest interval after initial treatment was 149 days

TREATMENT

The acute ulcer required little treatment beyond that of the major causal condition and bland moist dressings to the sore The presence of such a sore did not indicate need for any change in dosage of antidiphtheritic serum, the dose of which should be suited to the nasal or faucial lesion

Treatment of the chronic ulcer fell under two heads—general and local Cutaneous lesions are undoubtedly

NATURE OF PARALYSIS IN 12 CASES

Case	Cutaneous lesion	Dose of ADS units	Loss		Paralysis			Circulatory disturbance	Polyneuritis	Muscles affected
			Sensory	Reflex	Palatal	Accommodation	Facial			
1	Legs and fingers (carrier)	24 000	+	+	+	—	—	—	+	R trapezius, serratus, quadriceps, gastrocnemius, tibialis ant L quadriceps, gastrocnemius, tibialis ant
2	R hand, acute (nasal diph)	16,000	—	+	+	—	+	+	+	R abdominals, recti and laterals, gastrocnemius L abdominals, recti , ileopsoas , gastrocnemius , tibialis ant
3	Toe, acute (nasal diph)	40,000	+	+	—	—		—	+	Left sided paralysis with hemiplegic distribution of lower neurone type
4	Feet (carrier)	20,000	—	+	—	—		—	+	Arms free , bilateral quadriceps weakness
5	Legs and arms	20,000	—	—	—	+		—	—	No demonstrable motor weakness except of accommodation
6	Heel	22,000	—	+	—			—	—	Reflex loss with no demonstrable motor weakness
7	Hands and knees	24,000	+	+	—			—	+	Lower limb weakness especially in both quadriceps
8	Arms	20,000	+	+	—			—	—	No demonstrable motor loss , deep reflexes absent on both sides
9	L ankle R leg	20,000	+	+					+	Weakness in left forearm and both lower limbs notably quadriceps
10	Foot (epidermophyton)	32,000	+	+	—			—	+	All muscles of lower limbs with quadriceps + + +
11	Forearm nose, throat, ear	32,000	+	—	—			—	—	Sensory only
12	R. upper eyelid, conjunctivitis (nose and throat diph)	80 000	+	+					+	R. gluteus maximus and medius, quadriceps, hamstrings, gastrocnemius tibialis ant , peroneus longus, toe flexors L As for right with peroneus brevis in addition

common in the Middle East and take considerably longer to heal than at home The climate, excessive exposure of skin to sun, the lack of fresh fruit at certain seasons, the increased tendency to abrasions in certain occupations such as grooming, the difficulty of keeping scratches and bites covered, clean and moist, and the attacks of insects all play their part Consequently any factor which raises the patient's resistance to infection is important Though the suggestion of vitamin-C lack was not supported by intradermal dichlorphenolindophenol tests carried out on a number of the cases and though there were no clinical evidences of other vitamin deficiencies all cases were placed on a diet of high vitamin content To maintain resistance also a high protein intake was given Sodium chloride intake was also high. No vitamin preparations were used other than routine 'Marmite' The chronic sore should be treated in bed with the part immobile as far as possible

In view of the chance of paralysis, diphtheria antitoxin was given to all cases Since no controls were used it cannot be said whether this assisted healing In some cases, however, antitoxin treatment was delayed for some time pending positive diagnosis The general impression in these cases was that healing was more rapid after the injection than before A minimum dose of 20,000 units was given in all instances In view of the high incidence of paralysis it is debatable if the high dosage method of Bie (1940) would not have been justified Probably the long duration of the condition before treatment, with resultant fixation of toxin, would have made even such large doses ineffective Apart from that, antitoxin was not available in such amounts, and in any case such a high incidence of paralysis was never anticipated Antitoxin was given intramuscularly in most cases Manson-Bahr (1941) advises the use of antitoxin (dose 4000 units) in all cases of chronic desert sore and suggests that it should be given subcutaneously around the sore This method was practised in a few cases with multiple sores, but larger doses (20,000 units) were injected No beneficial result was noted from this method , the injected sores did not heal quicker than those, on the same patient, left uninjected Swabs soaked in antitoxin were employed as dressings on some sores in patients with multiple affection Again no beneficial effect was observed In these cases the intramuscular injection was also given

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ANTISULPHANILAMIDE ACTION OF PROCAINE IN VIVO

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CERTAIN bacteria can build up protoplasm from ammonia and carbohydrate, or other related substances of a simple chemical structure , others cannot do this, and require more complex substrates Such substrates which cannot be produced by organisms and which have to be supplied in their environment are termed " growth factors " Once these are present, the organisms grow satisfactorily The biochemical substance at each stage in the synthesis of organismal protoplasm, whether a growth factor or a compound capable of being synthesised, is termed an " essential metabolite," in view of the fact that metabolism cannot proceed without it Any substance capable of interfering with the chemical combination between essential metabolites and their appropriate enzymes will bring about cessation of growth and the ultimate death of the organism Woods (1940) showed that the inhibitory action of sulphanilamide on bacterial growth could be reversed by small quantities of *p*-aminobenzoic acid (here called " paba "), and from consideration of the chemical similarity between these two substances he advanced the hypothesis that paba was an essential metabolite for bacteria, and that sulphanilamide exerted its action by competing with paba for the appropriate enzyme He found that more than 570 mg of sulphanilamide was required to overcome the action of 0 02–0 1 mg of paba Since this is a reversible reaction, relatively large amounts of sulphanilamide can be rendered ineffective by minute quantities of paba

Such an antisulphanilamide action is not confined to paba Woods, investigating in vitro a number of substances chemically related to it, found that benzocaine, procaine, *p*-aminobenzamide and *p*-hydroxylaminobenzoic acid among others were highly potent in this respect He stated that procaine had about the same order of activity as paba itself, but that the effect was not immediate, the delay probably indicating that procaine has no antisulphanilamide action until hydrolysed by the organism

The fact that procaine was found to inhibit the action of sulphanilamide in vitro suggested to us that if a similar action could be demonstrated in vivo this would no doubt have a clinical application in infected cases under sulphanilamide therapy and requiring a local anæsthetic The antisulphonamide action of procaine has also been examined in vitro by Keltch and others (1941) Investigating the antisulphapyridine and antisulphathiazole effect of local anæsthetics derived from paba, they produced evidence in support of Woods's findings They showed in vitro that whereas one molecule of paba counteracted 200–500 molecules of sulphapyridine, one molecule of procaine counteracted 20 molecules That is, paba was 10–25 times as efficient in this respect as procaine The present work was undertaken to determine whether procaine acts in vivo as it does in vitro

METHODS

Experimental animals —Mice were used throughout They varied in weight from 11 5 g to 48 g with an average of 18 8 g Not more than 5 animals were kept in a cage, those injected with hæmolytic streptococci being isolated from controls Where cannibalism occurred, such mice were not included in the experimental data

Test organism —After preliminary trials with various hæmolytic streptococci, the Florence Richards strain was found to be the most suitable The minimum lethal dose of streptococci proved to be practically independent of body-weight and the same dose was therefore used for all weights of mice

Procaine —The appropriate weight of the solid was dissolved in sterile distilled water (All solutions were freshly prepared each day)

Adrenaline (PDCo) —This was diluted with physiological saline in which it remained stable for several hours In water the solution turned pink within an hour or two at temperature

Sulphanilamide —1 g of the dry powder was dissolved 125 c cm of sterile water (maximum solubility) Solution the solid was accelerated by heat, and was maintained keeping the bottle in an incubator at 37° C At temperature crystals formed which blocked the needles

Dosage and mode of inoculation —All doses of adrenaline and sulphanilamide were calculated on a weight basis (mg per g) The mice were reweighed at vals and the doses altered where necessary To avoid infection the hypodermic needles were immersed in bo water after each injection Syringes graduated in 0 01 c cm were used for the smaller doses The needle was inserted int the loose skin of the back parallel to the body surface fc about ¾ in After the appropriate dose had been injectec leakage was prevented by pinching the skin round the needl as it was withdrawn

Toxic and lethal effects did not differ in the various type sizes and age of mice, provided dosage was calculated on body-weight basis The severe toxic signs of procain resembled to a certain extent those of sulphanilamide

Estimation of blood sulphonamide —At the conclusion of th main investigation a number of mice were killed and the bloo sulphonamide estimated by Bratton and Marshall's (1939 method

PRELIMINARY INQUIRY

Before the main investigation could be undertaken, i was necessary to determine the optimum doses of th various drugs used , this was done by giving groups o mice increasing or decreasing doses

Procaine —The maximum non-toxic dose of procain was found to be 0 143 mg /g body-weight (e g , 0 2 c cm 1% procaine for a 20 g mouse) , doses of 0 150 t 0 200 mg /g produced slight excitability, muscula incoordination, rising to severe ataxia and convulsions The maximum non-lethal dose was 0 200 mg /g body weight , doses above this produced ataxia and convulsions proceeding to coma and death in certain cases The minimum lethal dose was 0 525 mg /g body-weight with doses above this all mice died

Adrenaline —The maximum non-toxic dose of adrenaline was found to be 0 0040 mg /g , this is about 300 times the maximum non-toxic dose for man The object of this investigation was to ascertain whether the usua concentration of adrenaline in procaine (1 50,000), as used for local anæsthesia, would of itself have any deleterious effect on the animals In none of the investigations to follow did the dose of adrenaline exceed 0 00126 mg /g body-weight—a dose completely non-toxic to mice

Procaine and adrenaline —Next we studied the effect on mice of a combination of procaine and adrenaline injected subcutaneously A 1% solution (10 mg /c cm) of procaine was used incorporating 1 50,000 of adrenaline The maximum non-toxic dose of procaine with 1/50,000 adrenaline was found to be 0 2 mg /g body-weight (without adrenaline 0 14 mg /g) The maximum non-lethal dose was 0 3 mg /g body-weight The minimum lethal dose was approximately 0 632 mg /g body-weight The addition of adrenaline (1/50,000) to procaine thus allows one to give about half as much again of procaine without incurring any toxic effect

Sulphanilamide —The maximum non-toxic dose of sulphanilamide was 0 5 mg /g body-weight for a first dose and 0 125 mg /g for a four-hourly maintenance dose. No signs of toxicity followed the administration of twice the maintenance dose (0 25 mg /g) night and morning to make up for those not given during the night It is of interest that the maximum non-toxic first dose of 0 5 mg /g body-weight corresponds to 35 g as a first dose for a man of average weight, indicating the remarkable tolerance mice have to the drug

Procaine with Adrenaline and Sulphanilamide —The maximum non-toxic dose of procaine (with adrenaline 1/50,000) for mice under the influence of sulphanilamide was 0 200 mg /g body-weight This did not differ materially from the same dose in mice not injected with sulphanilamide It was found later that this dose was excessive after three days of repeated injections, when it was accordingly reduced to 0 15 mg /g body-weight

Hæmolytic Streptococcus —The first strain of hæmolytic streptococcus (t

It proved unsuitable since the minimum lethal dose suspended in saline was about 900×10^6 organisms The Florence Richards strain was much more satisfactory From a ten-hour horse-muscle digest-broth culture a standard loopful was seeded into 15 c cm of the same medium which was also incubated for ten hours It was then centrifuged decanted and the deposit suspended in saline, and standardised against Brown's opacity tubes The mice were inoculated within an hour of removal of the cultures from the incubator The smallest dose lethal to all mice in 72 hours was 3×10^6 organisms (45 mice were used and the doses ranged from 1×10^5 to 500×10^6 organisms, 5 mice were inoculated with each dose selected) This minimum lethal dose was used in the main investigation, where it was found to kill only 8 of the 10 control mice Subsequently saline was shown to be an unsuitable fluid with which to make suspensions It was found that Locke's solution with 0 5% gelatin added was much more reliable Forty mice were injected with the same streptococcus, the doses ranging from 12×10^6 to 1×10^3 organisms All the mice died with the exception of one of three which received 1×10^3 organisms Locke's solution with 0 5% gelatin is thus superior to saline for ascertaining minimum lethal doses of streptococci (and of other bacteria)

Hæmolytic Streptococci and Sulphanilamide —Before proceeding to the main investigation, it was necessary to ascertain whether the maximum non-toxic dose of sulphanilamide could protect mice inoculated with the minimum lethal dose of hæmolytic streptococci (Richards)

Ten mice each received 3×10^6 hæmolytic streptococci suspended in saline intraperitoneally (1 45 PM) At 2 PM on the first day five were given a first dose of sulphanilamide (1 in 125 solution) equivalent to 0 5 mg /g body-weight, this was followed by doses of 0 125 mg /g at 6 PM and 0 25 mg /g at 10 PM On the second and third days these five mice received doses of 0 25, 0 125, 0 125 and 0 25 mg /g at 10 AM, 2 PM, 6 PM and 10 PM All survived with no toxic manifestations The five controls which received no sulphanilamide all died, in periods of 24, 48, 18, 48 and 35 hours

Thus the maximum non-toxic dose of sulphanilamide, followed by four-hourly doses to maintain an adequate blood concentration of the drug, gives complete protection to mice inoculated intraperitoneally with a minimum lethal dose of hæmolytic streptococci

ANTISULPHANILAMIDE ACTION OF PROCAINE

In this investigation the maximum non-toxic doses of the drugs were administered subcutaneously to mice The loose skin of the back was the site chosen The repeated injections seemed to affect the animals but little, for in only 3 cases in the whole investigation was a subcutaneous abscess found at autopsy, and there is no reason to believe that these small abscesses played a significant part in bringing about the fatal issue (385 mice were used, and over 4100 injections given) When mice became seriously ill, they were placed in separate cages

After three days of two-hourly injections the previously calculated non-toxic dose of procaine (with adrenaline 1/50,000)—0 2 mg /g body-weight—produced slight toxic signs, it was therefore decided that this dose was too large when administered *over a long period and it* was accordingly reduced to 0 15 mg /g body-weight, which proved non-toxic

In the preliminary investigation 3×10^6 hæmolytic streptococci were found to constitute the minimum lethal dose In the present investigation, as the result of an incidental modification of the technique of suspending the organisms, two of the ten control mice which we believed had received a lethal dose survived It is likely that more of the test mice would have died had the dose, as when given to the controls, proved lethal in all cases Nevertheless the findings give a definite if incomplete demonstration of the antisulphanilamide action of procaine in vivo

Procaine was given in 1% solution with 1 in 50,000 adrenaline, the dosage being 0 2 mg /g body weight from 6 PM on the first day till 4 PM on the fourth day, and thereafter 0 15 mg /g All mice except nos 1–4 received these doses Mice 1–4 were given procaine only, the dosage being 0 143 mg /g Mice 1–8 were injected two hourly from 10 AM to 10 PM for 7 days, in all other cases injections were given four-hourly from 10 AM till 10 PM

Sulphanilamide was given in 1/125 solution, the first dose being 0 5 mg /g body-weight Thereafter the mice received 0 25 mg /g at 10 15 AM, 0 125 mg /g at 2 15 PM and 6 15 PM and 0 25 mg /g at 10 15 PM daily

Hæmolytic streptococci (Richards) were given at 5 30 PM on the first day, the dose being 3×10^6, suspended in saline

Results —Of 4 mice inoculated two-hourly with procaine and adrenaline (1 50,000) for 7 days all lived Of 4 mice inoculated with procaine alone for 7 days all lived Of 4 mice inoculated four-hourly with procaine (+ adrenaline) and sulphanilamide for 7 days all lived Of 5 mice inoculated with 3×10^6 hæmolytic streptococci 4 died Of 5 mice inoculated with 3×10^6 hæmolytic streptococci and procaine (+ adrenaline) 4 died Of 5 mice inoculated with 3×10^6 hæmolytic streptococci and sulphanilamide all lived

In addition to procaine the following groups of mice were given 3×10^6 hæmolytic streptococci and four-hourly injections of sulphanilamide

Of 6 mice given repeated large doses of procaine (+ adrenaline) 5 died Of 9 mice given periodic large *doses of procaine 2 died Of 3* mice given repeated small doses of procaine 1 died Of 7 mice given occasional small doses of procaine all lived In all the mice which died, hæmolytic streptococci were isolated from the heart blood and in most cases from the peritoneal cavity as well

Since one of the 3 mice died after receiving continuous doses of 0 06 mg /g body-weight of procaine (+ adrenaline), it became necessary to investigate the effect of yet smaller doses of procaine The infecting dose of hæmolytic streptococci (10^4) was suspended in Locke s solution + 0 5% gelatin Twenty-seven mice were divided into 9 groups, all receiving an injection of hæmolytic streptococci Mice 1–3 received the streptococci only, all the rest received sulphanilamide in dosage as in the previous experiment Mice 7–27 also received decreasing dosages of procaine (+ adrenaline) ranging from 0 06 mg /g to 0 001 mg /g four times daily for 5 days The dose of hæmolytic streptococci used proved lethal while the amount of sulphanilamide administered afforded complete protection to mice Mice which received 0 006–0 001 mg /g body-weight of procaine (+ adrenaline) remained perfectly well Of 9 mice which received 0 06–0 01 mg /g procaine (+ adrenaline) 6 became ill and one died on the third day, in this last mouse, 0 03 mg /g of the procaine inhibited the action of the sulphanilamide Hæmolytic streptococci were isolated from the heart blood and peritoneal fluid at autopsy

CLINICAL APPLICATIONS

From Wood's figures it was calculated that the average amount of procaine used in minor surgery should be sufficient to inhibit all the sulphanilamide in the body, even during intensive treatment It was naturally a disturbing thought that procaine and the other local anæsthetics related to *p*-aminobenzoic acid commonly used, might prove dangerous in cases where sulphonamides are being given in therapy or prophylaxis If it were substantiated that this danger is a real one, then its significance would be appreciated by all who have to perform lumbar punctures in cases of septic meningitis, relieve pleuritic pain, treat war wounds, especially head injuries, deal with abdominal emergencies, suture perineal tears, or carry out a variety of other surgical procedures Again, the pain arising from the intramuscular injection of sulphapyridine is sometimes obviated by the simultaneous injection of procaine, and this would be a questionable procedure if it was shown that by so doing the sulphonamide was rendered inert

The present investigation has shown that procaine has an antisulphanilamide action when injected into mice infected with hæmolytic streptococci This action seemed really significant only in those mice that received the maximum non-toxic dose of procaine at short intervals of 6 such mice 5 died, and it is possible that all might have died had the dose of hæmolytic streptococci been a fully lethal one Unfortunately only 8 of the 10 control mice which were expected to die did so Notwithstanding this, the results are sufficient to indicate that the repeated administration of procaine antagonises the bacteriostatic action of sulphanilamide Where isolated maximum non-toxic doses of procaine were used, this action of the drug was less impressive Of 9 mice so treated only 2 died , these being the only ones which received this dose of procaine with the last injection of sulphanilamide at night It is at present impossible to say whether this observation is of any significance With sporadic small doses there were no casualties However, of 23 mice which received repeated small doses of procaine, ranging from 0 1 mg /g to 0 001 mg /g body-weight, 2 died, indicating that even a fifth of the maximum non-toxic dose when given four-hourly is liable to produce an occasional fatal result

No ill effects were observed in mice from any cumulative action of procaine given as the maximum non-toxic dose at two-hourly intervals It must therefore be concluded that the drug was fully excreted in that time, as the acetylated compound or otherwise, or, if retained in the body, rendered physiologically inert The average blood concentration of free sulphanilamide in the mice used in this investigation was 31 7 mg per 100 c cm , and it is therefore reasonable to suppose that 0 03 mg /g body-weight of procaine can inhibit this amount of sulphanilamide in the body Since in man the optimum blood concentration of sulphanilamide is approximately 6 2 mg per 100 c cm one might expect this amount to be inhibited by 0 006 mg /g body-weight of procaine (i e , 14 c cm of a 3% solution, or 0 42 g for a man weighing 70,000 g) With lower blood concentrations of sulphanilamide, correspondingly smaller amounts of procaine would produce effective inhibition (e g , 14 c cm of a 1% solution for a blood concentration of 2 mg per 100 c cm) Such figures are within the limits of clinical application where sulphanilamide is administered in low dosage, at varying intervals exceeding four hours in the early stages of illness, irregularly, or omitted at night

Before drawing conclusions, it might be well to consider the following points The inhibitory dose of procaine may vary from case to case according to the total amount of sulphonamide and of *p*-aminobenzoic acid (paba) in the body, derived from the infecting organisms and other sources The replacement of sulphanilamide by procaine in the enzyme system is believed to be reversible, depending on the law of mass action or competitive inhibition, as is known to be the case with paba If, however, the enzyme-procaine linkage should prove to be a relatively stable one, then a single effective dose of procaine might interfere with the action of sulphanilamide for many hours

The persistence of the sulphanilamide action of procaine no doubt depends largely on the rate of its excretion, which is governed by many variable factors, such as concentration, dosage, presence or absence of adrenaline, renal and hepatic dysfunction, dehydration and the state of the local circulation and tissues—for example, œdematous or partially devitalised tissues would tend to delay its local removal, thus leaving a depot of procaine from which small quantities would be absorbed over a long period

Since the biochemical changes undergone by procaine in the human body are imperfectly understood, it is uncertain how it exerts its antisulphanilamide action Woods suggested that in vitro it was the hydrolysed product, not procaine itself, which acted in this way Whether this is true in vivo has yet to be shown Paba itself may be one of the derivatives of procaine in vivo, but whatever the active product is it may retain its activity long after all traces of procaine as such have disappeared from the site of injection and from the system

The viability of the bacteria in the presence of sulphanilamide, and the degree of immunity of the host may well decide whether multiplication of the bacteria will occur, and if so its extent, during the stage when procaine is inhibiting the sulphonamide Thus early in the disease, when the viability of the organisms is high and the immunity of the host low procaine may favour growth, while later on, when the sulphonamide has "asthenisised" (Mandelbaum 1941) the bacteria and immunity has had time to develop (Gordonoff and Mundel 1941), the organisms may fail to revive even in the presence of procaine (Using the hæmolytic streptococcus, an in-vivo investigation, as yet unpub failed to substantiate Gordonoff and Mundel's with the pneumococcus)

From the small numbers of mice used in the investigations, and the various factors discussed a we fully appreciate that such quantitative applicat from mice to man as have been attempted, while may be correct, must be regarded as purely tentative

THREE CASES

In the following three hospital cases procaine w given in large single doses during sulphonamide administration

CASE 1 —A miner, aged 39, received in a blast accident numerous lacerations of the face, neck, chest and extremities. Shock was severe and three pints of plasma were administered. Two days after admission to hospital his temperature rose rapidly to 103° F A type 12 hæmolytic streptococcus was isolated from the blood At the commencement of pyrexia he was given 3 g of sulphanilamide and four hours later another 2 g , thereafter he received a maintenance dose of 1 g four hourly Twenty-four hours after the drug was started he complained of pain over the sacrum and right thigh Temperature 102 8° F Examination showed two large, tense hæmatomas These were incised under local procaine anæsthesia in the ward Four incisions were made, about 60 c cm of a 1% solution of procaine being used, and 0 5 g of sulphanilamide powder was introduced into each of the incisions , oral administration of the drug was continued Type 12 hæmolytic streptococcus was cultured from the hæmatomas Twenty eight hours after the operation the temperature was down to normal and there was no further rise Sulphanilamide therapy was continued for three more days The patient recovered completely

CASE 2 —*A man, aged 25, was admitted to hospital suffering* from pneumonia and dry pleurisy with a temperature of 101° F On admission sputum was taken for examination and the infecting organism proved to be a hæmolytic streptococcus Sulphapyridine was given shortly after admission, the dose being 2 g followed by 2 g in two hours, and thereafter 1 g four hourly. Next day the man's general condition had improved and his temperature was 99° F , but severe pain was caused by extensive dry pleurisy and 30 c cm of 3% procaine was infiltrated into the region where friction was audible or pain on respiration experienced Only partial relief resulted, so the injection was repeated 1½ hours later in *the area of residual pain Relief was then complete*, little further discomfort being experienced The temperature settled steadily, being normal in the evening In this case, despite the massive dose of 50 c cm of 3% procaine (1 5 g) given in 1½ hours, there was no evidence of an antisulphonamide effect

CASE 3 —A man, aged 36, was admitted to hospital a week after case 2, with an almost identical clinical picture The infection was pneumococcal, and sulphapyridine was given in similar dosage On the second day there was a normal response to the drug but the pain persisted , 30 c cm of 3% procaine was injected into the affected part of the pleura with almost complete relief In this case the temperature rose three hours later to 99 5°–100 5° F , but thereafter it fell rapidly to normal

In none of these cases was there evidence of a well marked or persistent antisulphonamide action of procaine It must, however, be borne in mind that the local anæsthetic was not given to any of these patients until twenty-four hours after the beginning of sulphonamide therapy One cannot therefore assume that procaine can be given with impunity early in treatment In vitro, larger doses of procaine are required to reverse the action of sulphapyridine (Keltch et al 1941) than sulphanilamide (Woods 1940) It is probable that this also applies in vivo

CONCLUSIONS

Procaine has been shown to have an antisulphanilamide action in vivo

This action becomes particularly obvious where the procaine is administered in repeated large doses early in sulphanilamide therapy (5 out of 6 mice died)

Repeated small doses of procaine produced an occasional fatal result in infected mice receiving large doses of sulphanilamide Such a procedure therefore seems contra-indicated in man

Since the administration of occasional small doses of procaine had no effect on the therapeutic value of sulphanilamide in mice, this procedure can probably be adopted without risk in human cases It is difficult to say what constitutes a harmless dose of procaine, since this will depend on the amount of sulphanilamide in the body, the sulphonamide *p*-aminobenzoic acid ratio, and possibly other factors By comparison with the results obtained in mice in this investigation, 20 c cm of a 3% solution of procaine should prove harmless to a patient with 3 mg per 100 c cm blood concentration of sulphanilamide; but since the sulphonamide *p*-aminobenzoic acid ratio cannot yet be determined this dose might well be cut by half or two-thirds (i e to 7–10 c cm of a 3% solution of procaine or correspondingly greater amounts of a weaker dilution) This amount should prove sufficient in minor surgical operations

The occasional large dose of procaine appears, for the most part, to have no lasting inhibitory action This was observed both in humans and in mice Exceptionally, however, mice died (2 out of 9) after such sporadic doses of procaine It therefore seems unwise to use massive doses of procaine (or a local anæsthetic allied to paba) in cases under sulphonamide treatment, especially early in disease, and more particularly in those cases not receiving intensive treatment Where a large amount of a local anæsthetic is required under these conditions one of the drugs not allied to *p*-aminobenzoic acid should be used

Local anæsthetics allied to *p*-aminobenzoic acid are procaine, 'Larocaine, 'Tutocaine,' 'Butyn' 'Anæsthesin' and 'Orthoform' (methyl-amino-oxy-benzoate)

Local anæsthetics not allied to *p*-aminobenzoic acid are cocaine, tropacocaine, eucaine (benzamine), 'Stovaine' 'Nupercaine' 'Phenocaine,' 'Pantocain' 'Psicaine,' 'Eccaine,' 'Elypin,' 'Apothesine,' 'Diothane,' and 'Metycaine'

This work was carried out with a grant from the Earl of Moray Fund and a Wilkie Research Fellowship We are indebted to Prof T J Mackie and Prof J R Learmonth for their advice and interest in the investigation We further wish to thank Dr E Czszepanski for his assistance and Dr S R Elsdon and Dr S W Challinor for their comments on the biochemical aspects of the subject

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New Inventions

A NEW CIRCLE TYPE CARBON-DIOXIDE ABSORBER

With the collaboration of Messrs Coxeter and Son Ltd a circle type absorber in which anæsthetic requirements have been combined with mechanical efficiency has been produced The machine was intended to fit the standard Boyle machine that has been distributed widely in the EMS It slides on two runners fixed under the top shelf of the anæsthetic table frame, and can be pushed under the shelf when not in use (fig 1)

Breathing is restricted as little as possible by using wide bore gas channels and making the patient's breath take a path with few changes of direction Large control drums are used and special glanding arrangements provided to eliminate leakage In the ether vaporiser wicks, which to be effective must be of several thicknesses and which soon restrict breathing have been eliminated The moving parts of the reservoir bag (fig 2), are carefully balanced on ball bearings, and move with the slightest respiratory effort The measured restriction of the circuit is 2 mm water with the ether off and 4 mm with it on

In order that CO_2 should be absorbed as efficiently as possible, the orthodox type of circuit has been replaced by one in which both inspirations and expirations pass through the soda lime thus combining the absorptive efficiency of the to-and-fro type with the practical advantages of the circle type absorber

The ether vaporiser normally used in an absorber circuit has a wick to give sufficient surface of contact of the ether, and to provide a high enough concentration of ether in the mixture The disadvantages of this type are the restriction of breathing caused by the wick and the gradual loss of efficiency due to condensation of water on it Both these disadvantages are overcome in this vaporiser; the wick is dispensed with and instead the gases are deflected by baffles several times on to the surface of the ether Since the gases are brought into the vaporiser at the centre of a concentric nest of baffles, the lowest ether temperature is reached at the centre of the container The temperature drop in the peripheral portions of the ether is minimal and the gases before leaving the vaporiser are in contact with the warmest ether The baffles like the ether pot are made of copper, and act as conductors of heat from the rest of the apparatus to the liquid ether

To make inflation of the lungs easy, whether for control of the respiration or for artificial respiration in emergency, the bag is concertina-shaped It is connected to a lever ending in a knob conveniently placed on the front of the machine Depression of this knob compresses the bag with little effort on the part of the anæsthetist The lever system is balanced on ball bearings The slightest movement of the bag is transmitted to the knob and is thus easily seen The body of the machine is cast in one piece with the drum channels bored in it, to avoid leakage Expiratory and inspiratory valves are fitted to the machine, as well as a nipple through which air can be introduced The soda-lime canister can be quickly removed by swinging aside a large easily loosened sling The gravity valves are made of 'Scolam,' a compressed fibre which allows them to be twice as thick as they would be if made of metal, the possibility of warping is thus diminished, without increase of weight The valves are visible, and are easy and cheap to replace in war-time

Several of my colleagues have given a clinical test to this absorber and I am grateful for their helpful suggestions They have confirmed my opinion that only as a result of collaboration between manufacturers and user can a real advance in the design of anæsthetic apparatus be made

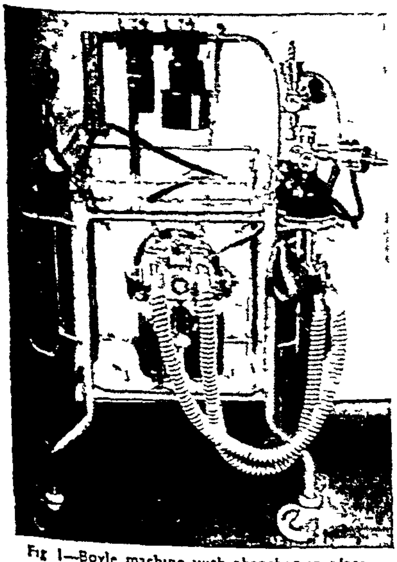

Fig 1—Boyle machine with absorber in place

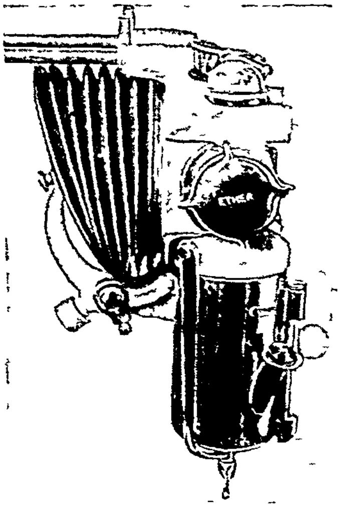

Fig 2—Side view of absorber showing bag and lever mechanism

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Reviews of Books

Food and Planning

J R MARRACK, MD Camb , professor of chemical pathology in the University of London at the London Hospital London Gollancz Pp 285 15*s*

THIS book encompasses a sound up-to-date statement of the human body's needs in nutrition, a discussion of what people actually eat in different parts of the world, the relation of diet to health, the contact of food-supplies and rationing in the war of 1914–18, the effect of that war upon health, food-planning for present scarcity and planning for a possible future plenty It is thus ambitious in scope , but it succeeds in giving a picture of what is, what could be, and what should be done to supply the world's demands in sound nutrition It might easily serve as a textbook for more forward-looking men of affairs who are determined that our future economy shall not entail one country's starving while another dumps its surplus food into the sea The medical reader will naturally be most interested in the first four chapters which deal in a practical but scientific way with the familiar ground work of nutrition Professor Marrack brings this study up to date and makes it exciting He is no armchair dietitian he gives for example a picture of himself at one point of the book stalking the woods for a " vegetable beef steak " and finding but one, and that woody, in a walk of eight miles Nor do the vast number of trees in the dietetic forest prevent his seeing it for what it is—or might be—with a sound scheme of afforestation The short section on the family's adaptation to war supplies can be heartily commended to any housewife and to any caterer, especially for school canteens and British restaurants, as a practical essay in making the best of a bad job , if our politicians would heed the author's reiterated warning about the needs of the adolescent we should cease to run the risk of a stunted or tuberculous postwar population Social workers will turn to the chapters on what people eat, and health and diet, and will find all the data they need for planning sound national nutrition The last chapter makes a plea for world planning of production and distribution of food The author sees that for any such plan to succeed national self-sufficiency must be given up and the traders' profit motive be taken out of food production While his standpoint is decidedly left of centre, his is no uncritical valuation of socialist doctrine, and he warns us thus in his closing sentence "But if we have not the courage to build a new world with a common purpose, men will again turn from our shortsighted prudence—so reasonable, so respectable, so devoid of hope and inspiration—to creeds that are neither reasonable nor respectable, but do offer some hope and the inspiration of a common purpose " A good, sound, useful and often brilliant book with only one serious flaw it has no index

Intestinal Obstructions

(2nd ed) OWEN H WANGENSTEEN, MD, professor of surgery to the University of Minnesota London Baillière, Tindall and Cox Pp 484 33*s*

THIS is in many respects a new book it has a new title, the format is different, the text is longer, many of the illustrations are original and the arrangement is much improved Wangensteen discusses the effects, diagnosis and therapy of intestinal obstructions, and then turns his attention to special cases of obstruction Accounts of his own experimental work have been abridged and incorporated in Part I, and he has achieved a more even balance between operative and non-operative forms of treatment The indications, the technique, the limitations and the contra-indications to the use of intestinal intubation with the small stomach-tube and the Miller-Abbott tube are described, and pains have been taken to damp over-sanguine ardour in the employment of suction-siphonage, especially when the diagnosis is in doubt The importance of interpreting clinical and X-ray evidences correctly is duly emphasised He does much to further the use of the straight X-ray film of the abdomen to determine whether obstruction is present, complete or incomplete, in the jejuno-ileum or the colon, and if in the small intestine whether in the upper, middle or lower segment Reliable differential criteria are lacking to distinguish between simple and strangulating obstructions , Wangensteen seeks to differentiate them by and radiological methods Surgery is still the of therapy, and he insists that the cases which urgent operation are those of strangulating c and acute obstruction of the colon with much Operative techniques are lucidly described and illustrated He favours end-to-end anastomosis performing bowel resection by the closed or technique, and advises the use of the Petz clamp in expediting intestinal resections and the employment of the ingenious twin resection clamps for closed tomoses, whether these are lateral, side-to side or end-to-side He has made an outstanding contribution the treatment of acute intestinal obstructions in this book.

Pye's Surgical Handicraft

(13th ed) Editor HAMILTON BAILEY, FRCS Bristol. *John Wright and Sons* *Pp 536 25s*

THIS is a second war-time edition The book appears with girded loins and tightened belt, but in spite of the slight reduction in the number of pages the contents have increased through economical arrangement of the type It contains practical advice on the treatment and management of general and special surgical cases, and each section is written by an authority Self-explanatory illustrations support the practical advice given in the text and the medical side of surgery is adequately covered Chapters on diseases which may accompany or complicate surgical cases are written by physicians Most chapters contain something new, and many are by new contributors New chapters deal well with sulphonamide therapy, wound healing and serum administration

Diseases of Women

(9th ed) HARRY STURGEON CROSSEN, MD, FACS , ROBERT JAMES CROSSEN, MD London Henry Kimpton Pp 948 63*s*

THE latest edition of this American classic amply surveys the whole field of modern gynæcology—at one time almost exclusively a surgical specialty but now becoming more and more bound up with endocrinology The authors cover the endocrine aspect with full reference to all important recent work In other respects, too, the book is well balanced and practical, illustrated with good plates and diagrams It remains a standby for all interested in gynæcology

Dental Surgery and Pathology

(8th ed) J F COLYER, KBE, LLD, FRCS, LDS , EVELYN SPRAWSON, DSc, MRCS, LDS London Longmans Green and Co Pp 1067 45*s*

THE additions and revisions in the war-time edition of this good book cover variations in structure and regressive changes in the tooth pulp and the pathology of neoplasms The use of bold headlines, of tabulation and of special type for important points makes the facts memorable Many of the illustrations come from our oldest textbooks, but they are reliable and well chosen The chapter on caries is relevant to the issue of the sweet ration to children and our war-time bread The authors consider there is " abundant clinical evidence to show that the use of sugar is closely connected with the amount of caries," and discuss the decalcifying effects of cereals There is only half the caries in districts with hard water, they find, as in districts with soft water , thus the addition of *calcium carbonate to our* bread may perhaps counterbalance the decalcifying power of the 85% extraction of our wheatmeal bread, plus the effect of the sweet ration The beneficial effect of raw milk, as opposed to heated or pasteurised milk, in preventing dental caries is noted The article on Vincent's ulceration and angina is not very helpful and could be rewritten in the light of present-day knowledge The chapter on fractures of the jaw, though good in its way, is more reminiscent of the last war than this one, perhaps because, as the authors suggest in their preface, the more radical surgical innovations are still in *a state of trial* and experiment, but this does not explain the almost complete omission of bone-grafting. To students this book is almost indispensable , older practitioners of dentistry will look forward to the time when it is further revised and brought into line with the advances in knowledge gained in this war

THE LANCET

LONDON SATURDAY, DECEMBER 19, 1942

NEUROTIC CASUALTIES IN THE FIELD

THE appearance of acute neurotic syndromes in the front line of battle may seriously embarrass the medical services, and Major H R LOVE[1] of the Australian Army discusses their prevention, rapid treatment and disposal All agree that the best prophylaxis is by selection of personnel Men of poor intelligence and unstable constitution, revealed by a history of previous breakdown, are not suitable for front-line duties , they should be recognised in time and allocated to less arduous posts Of neurotic casualties in Libya LOVE notes that an unduly large proportion had a definite and easily elicited past history which might have given a clue to their liability to breakdown This aspect of the problem is probably now being tackled much more energetically than hitherto Closely related with the incidence of neurotic casualties is the general morale of the company in which they occur LOVE finds that the rate varies greatly between individual units with fairly equal standards of training and undergoing much the same stress Some weapons of war, such as the dive-bomber and the tank, are more upsetting to morale than others , the better the men are trained in active and passive defence against such weapons the less likely they are to be affected Morale is better and neurotic casualties fewer in advance than in retreat, though in a retreat many neurotics will fall prisoners to the enemy, and so will not swell the medical records of their own side LOVE records that field and AA gunners, who take an aggressive part in the battle at all times, showed a low incidence of neurosis

The clinical picture of acute neurosis in the field includes acute anxiety and fear states, hysterical conversion syndromes and fugues, purposeless running around and screaming " The men with severe fear states," writes LOVE, " between the ubiquity of their fears and the torments of conscience suffered most unenviably It is small wonder that some, if not evacuated from the line, sought relief in a self-inflicted wound or even suicide The truly amazing thing is the manner in which some men, in spite of their mental sufferings, were able by dint of sheer moral courage to carry on and do successful jobs " In the ebb and flow of desert warfare evacuation was none too easy Treatment devolved in the first place on the battalion medical officer, and took on an emergency character The patients had to be quickly knocked out with a full dose of sedative—phenobarbitone, chloral, or failing a better drug, alcohol With some sedation during the day and a full and restful sleep at night, many recovered and could return to duty As in the last war, it has been found that prospects of recovery are much better with rapid treatment near the front line than after evacuation to the rear Both LOVE and CRAIGIE[2] emphasise the need for having physical methods of treatment available on the spot The rationale of these methods was first developed by MIRA[3] in the Spanish Civil War, and their use in a base hospital was elaborated by SARGANT,[4] who pointed out that neurosis in the good soldier arises most readily on the basis of fatigue, exhaustion and loss of weight In battle conditions these cannot of course be prevented , but the battalion medical officer, by seeing that his men do sleep when they have the chance can do a good deal to minimise their effect The first symptom of an oncoming neurosis is often an incapacity to sleep restfully, even when circumstances allow Preconceptions about the " drugging of the troops " should not be allowed to interfere with energetic treatment of this symptom, which may itself start the vicious circle of exhaustion and avoidable neurosis

Apart from the fact that these syndromes arise more readily where there is a constitutional tendency, we know little of their pathogenesis LOVE puts forward the view that the development of the neurosis is a process of conditioning In the constitutionally predisposed the fear reflex is easily and powerfully aroused , in others repetition of the stimulus, with lack of time for extinction, leads to an increasing facilitation and the reflex may be conditioned to wider and wider associations LOVE has likened a third group to the state produced in dogs when inhibitory and excitatory stimuli are very near the animals' threshold of discrimination, and they lapse into a chronically irritable condition when further conditioning becomes impossible , recovery only follows long periods of rest and treatment The suggestion is ingenious and merits further investigation Certainly neurotic states arise after comparatively short experiences of battle and are associated with hypersensitivity to many and not only fear-producing stimuli , these may be refractory even to long periods of treatment and re-education

A STUDY OF AMERICAN MEDICAL POLICY

WHEN the depression in the United States led to heart searchings about the American social system, the medical services of the country came under scrutiny In 1932 the Committee on the Costs of Medical Care reported that there was a tremendous amount of preventable pain and mental anguish, needless deaths, economic inefficiency in medical provision, and social waste The Committee on Economic Security, subsequently appointed, included in its recommendations federal assistance of the maternal and child welfare services and a nation-wide preventive health programme Health insurance was considered but deferred It was particularly at this time and before the Social Security Act was passed in 1935 (which side-stepped health insurance but provided for an expansion of public health work) that the American Medical Association came into the public eye as an opponent of state medicine The medical profession were not unanimous in their view and a Committee of Physicians, which seems to have arisen primarily as an advisory committee of the American Foundation, took up an independent line in favour of governmental intervention in medicine, for which it received wide support The American Medical Association was therefore not only the subject of some public obloquy, but also exposed as not presenting that united front in medical politics which it had tried to foster Those who differed from its policy claimed that it represented merely the views of an active minority of the profession and not of the whole body

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[1] Love H R *Med J Aust* 1942, ii, 137

[2] Craigie H B *Brit med J* 1942, ii, 675

[3] Mira, E *Ibid*, 1939, i, 1217

[4] Sargant, W *Ibid* 1942, ii, 574

It is against this background that Mr GARCEAU's painstaking study[1] of the American Medical Association should be read The association is a federation of 2055 county medical societies with 34 state medical societies interposed between them and the central body Policy filters up from county members' meetings through their representatives at meetings of state houses of delegates, which again send delegates to an annual central meeting in Chicago , and it flows back through the same channels The arrangement is workable and convenient Its efficiency in making the association a mirror of medical opinion must depend on the operation of the machinery It would seem that contests for the position of delegate are deliberately avoided for fear of faction Selection, although requiring formal approval, is in the hands of a few leaders in each area, a system which may provide a good quality of personnel but doubtful representativeness The conduct of business in the central house of delegates is smoothed by the existence of committees of reference which, sitting during the annual meeting, virtually frame its policy These are appointed by the speaker of the house and meet behind closed doors with the officers and permanent officials before presenting their resolutions to the general meeting Their resolutions are nearly always accepted Here there is obvious scope for the play of influence by a small active group of medical politicians and officials in the moulding of policy Similarly the standing committees which handle the affairs of the association throughout the year are nominated by the president for the time being , there appears to be no open contest The association has a large office organisation with experienced officials who actively maintain contact with the periphery in several ways Most important of all is the *Journal* and it seems to be the general view that the editor is the most powerful personality in American medical politics The machinery of the association appears to provide little control over his activities in this field

Mr GARCEAU, after citing the evidence that there is disquiet and distrust of the association in American medical circles, examines as far as possible the signs that it does not express the corporate view of the profession He admits that they are not convincing Whether the vigorous central office has unwisely created medical opinion is an open question After all it is the function of such a body not merely to reflect opinion but also to disseminate information which goes to build it up There have been occasions when relevant facts have been suppressed, as, for instance, the expressed view of the British Medical Association in 1930 in favour of health insurance and its extension to dependants A certain denigration of the British practitioner has no doubt the same political object and its success may be seen even in the writing of such an unbiased and not uncritical student as Mr GARCEAU, who says of the American small-town doctor, "He may be a good deal more than the English panel practitioner and yet a good deal less than a man up to date in his field" That the misconception underlying this statement is among American doctors is a repercussion of the paign of the American Medical Association any movement toward what it describes as medicine Mr GARCEAU suggests that intra in medical politics may lead to loss of prestige medicine in its day-to-day occupations An open in the profession may lead to questioning of its bility in technical matters The association, thinks, has recruited able men, allowed them to good incomes, but failed to hold them so respons that they will keep the group out of trouble " mechanism is not a guarantee of a healthy society and a healthy government The group must learn to deal with an active political minority within its membership, not to accept them passively or go on a campaign to scalp them all There is a strong need for more politicians, surely not for less" His chief proposal, that a party system within the association might be developed, hardly seems a satisfactory remedy There is more to be said for dropping the façade of internal unanimity by opening the electoral door to its representative positions and administrative offices

BISMUTH IN SYPHILIS

ALTHOUGH undoubtedly rapid in antisyphilitic action arsphenamine soon proved its inability to deal alone with syphilis infection in its entirety In the early years this inability was compensated by the retention of mercury as a supporting agent, but from 1921 onwards that veteran was gradually superseded by bismuth For many years now it has been traditional in European circles to treat the early lesions of syphilis with both these remedies, either at the same sitting or within the same week, and since this combined therapy seemed satisfactory it was natural that efforts were made to produce a stable chemical union of these two agents which would combine not only their structure but also their antisyphilitic effect Such a combination of bismuth with a pentavalent arsenical was launched in 1925 by LEVADITI under the name of 'Bistovol' (bismuth stovarsol), which contained 15% of arsenic and 41% of bismuth Some degree of antisyphilitic effect was reported for this compound but its use never became widespread and evidently the union had failed to achieve the desired summation of the efficacy of the two components In the meantime there have been trials of other combinations, such as bismuth arsanilate and bismuth tryparsamide, but reports on their success or otherwise have been scanty

Another of these compounds, 'Bismarsen,' synthetised by RAIZISS in 1925, has been used over a period of fourteen years by BEERMAN, SHAFFER and LIVINGOOD[1] of Philadelphia This preparation, defined as bismuth arsphenamine sulphonate, containing 13% of arsenic and 24% of bismuth, is a welding of the bismuth element into a trivalent arsenical—the arsphenamine base—in contrast to the inclusion of the less active pentavalent arsenical radicle exhibited in bistovol It does not seem to be the hoped for fully effective combination, for BEERMAN and his co-workers found it appreciably less successful than bismuth and arsphenamine administered separately The healing effect on early syphilitic lesions was good but slow and the relapse-rate about 12% Systemic reactions were met with after only 0 5% of injections, and the compound appears to have been well tolerated by sufferers from late syphilitic affections, particularly cardiovascular lesions, which showed some encouraging improvement Among the 823 patients there were 5 examples of arsphenamine dermatitis and 5 of purpura hæmorrhagica There were no deaths, and no examples of hepatitis or jaundice, though this complication has been reported occasionally by others using bismarsen The long-term results are of special interest Of 71 patients treated for early syphilis and observed for periods ranging from six months to fourteen years, serological relapse occurred alone in 4 and in conjunction with the reappearance of infectious surface lesions in 4 others One or more examinations of the cerebrospinal fluid were made during the period of observation in 48 of these 71, and only 6 showed any abnormality, about half of the patients with fixed serological reactions showed a later reversal to a negative Although healing of the tertiary osseous and cutaneous lesions in middle-aged and elderly patients takes place more slowly, it seems that bismarsen may be used with advantage in these patients especially when they do not tolerate other organic arsenical compounds well

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[1] The Political Life of the American Medical Association Oliver Garceau, department of government, Harvard University London Humphrey Milford, Oxford University Press Pp 186 14s

[1] Beerman, H , Shaffer, B and Livingood, C S *J Amer med Ass* 1942, 120, 333

Postarsphenamine jaundice, under the title of 'Salvarsan' jaundice, was a formidable interrupter of treatment and a cause of ill health and some deaths during the last war, and there has lately been a recurrence of the unsatisfying discussions on the rôle played by suspected factors other than arsphenamine in its production[2] The old ground of alcohol, diet, vitamins, intercurrent infection and so on has been explored again without bringing to light any very illuminating facts, but although instances of jaundice following bismuth treatment alone are occasionally encountered the possibility of bismuth being a factor seems to have been neglected KULCHAR and REYNOLDS[3] report that of the 1032 male prisoners in the United States prison at San Quentin receiving treatment for syphilis between 1936 and 1942, 144 (13 9%) became jaundiced, and in 121 (10 3%) of these jaundice appeared while bismuth was being given The treatment system consisted of neoarsphenamine or 'Mapharsen' in courses of ten weekly injections in alternation with courses of twenty weekly injections of sodium iodobismuthite There was no epidemic of catarrhal jaundice among the prisoners during the period of this study and the endemic rate was low—0 1% in 1941 Among the 121 cases of jaundice during bismuth treatment, 4 became jaundiced during the first course of bismuth, and previous arsenical therapy could be excluded The remaining 117 received arsenicals in some form before the course of bismuth during which the hepatitis occurred Jaundice began within four weeks of the last injection of an arsenical in 34 cases and in these the arsenic is considered as a possible factor Jaundice was not evident until the fourth to the eighth week of bismuth therapy in 83 cases and in the ninth week or later in 56 cases It was thought that the time intervening since the last injection of an arsenical in these cases made it unlikely that the jaundice was entirely due to previous arsenical therapy Many syphilologists, however, would not accept this short time limit as permitting the exclusion of arsenic as a possible factor, for examples of postarsphenamine jaundice may be met with up to four or five months after the last arsenical injection Although the evidence presented by KULCHAR and REYNOLDS for ascribing a major rôle to bismuth in these cases is not unequivocal, their report serves as a reminder that bismuth puts an additional load on the liver, and might, like arsenic, prepare the ground for virus infection

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Annotations

ALLERGY IN CHILDHOOD

SIR ARTHUR HURST, speaking at the section of disease in children of the Royal Society of Medicine on Nov 27, glanced at fashions in asthma cures during the past century the nasal cauterisation of Francis, the early skin tests of Chandler Walker of Boston, the allergen-free chambers of Van Leeuwen, and modern methods of desensitisation The most potent cause of an attack, he finds, is expectation, and he thinks it better to inject a small dose of adrenaline to abort an attack in its early stages rather than to keep a patient on an abnormal diet and in a special environment Despite this discouraging picture, Dr George Bray believes in having a try Attacks of asthma in early childhood, he considers, all have an allergic basis, but as the attacks recur they begin to be precipitated by non allergic factors such as excitement, emotion, exertion, and fatigue He recognises three types a hereditary type with a family history of allergy, a variant of this which he calls the eczema-prurigo asthma type, and a tissue damage type, associated with severe colds, bronchitis and pneumonia In a third of the hereditary cases there is a history of infantile facial eczema, and in three-quarters of them the asthma sets in before the third year The breast-fed child often becomes sensitive to such things as milk and gruel, eggs and egg concentrates, egg milk chocolate, milk drinks containing eggs, and cotton seed which is a component of 'Lactagol' Allergic mothers should avoid such foods during pregnancy and lactation, he suggests On weaning the child may become allergic to cow's milk or some cereal such as wheat, oats or barley If cow's milk is responsible it should be boiled for 5 minutes and after the scum has been removed should be acidified These processes have already been carried out on 'Allergilac', other substitutes for fresh cow's milk are evaporated or condensed milk, goat's milk or synthetic milk made from soya bean flour The eczema-prurigo-asthma syndrome commonly appears during the first six months of life with itching, vesicular and papular eruptions and lichenification from scratching, the flexures *being particularly affected*, in the second or third year bronchitis, asthmatic and hay-fever attacks may be added to the picture, and all are persistent up to puberty The skin is ichthyotic in a fifth of the children Sensitising agents vary with the age of the child, in infantile eczema up to the age of 9 months for each 20 food reactions (usually to egg, milk or wheat) there is only 1 inhalant, between 9 months and 2 years the proportions are 20 food reactions to 8 *inhalants*, over 2, in cases of flexural eczema, the proportions are 20 food reactions (usually fish, pig, nuts or vegetables) to 24 inhalant reactions (usually to animal hairs, pollen, or feathers), and in cases of asthma, vasomotor rhinitis and hay-fever, for 20 food there are 100 inhalant reactions It is among this last group that some of the largest reactions are seen to pollens and horsehair In the tissue damage type of allergy, asthmatic attacks are often restricted to the winter months and a respiratory infection sometimes associated with measles or whooping-cough provokes the first attack In this type of allergy, fibrotic changes may be seen in radiograms of the lungs, but in the other two types they are rare. Sensitivity is usually to inhalants—feathers or down, among which the child spends his time when ill. He may occasionally also become sensitive to foods such as milk, gruel, barley and albumin water. Dr Bray believes in restricting the diet of the allergic child and suggested a basic diet which excludes cow's milk in its natural state, pig and pig products, shellfish, nuts, chocolate, strawberries, apples, bananas, beans, peas, tomatoes, potatoes, cabbage, and celery. The child's bedroom should be airy and free from dust, without hair or feathers in the bedding. He recommends only two medicines: min 10–20 of hydrochloric acid in water before meals if there is hypochlorhydria, and ephedrine linctus at bedtime every night for several months. If the child is sensitive to dust or pollen, desensitising injections often give good results. In the light of long experience Mr James Crooks suggested that while nasal surgery was not curative of allergic conditions any septic focus should be dealt with on general lines; and Dr F A Knott remarked that sensitisation with bacteria had never been demonstrated in any cases he had seen.

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[2] See *Lancet*, 1942, ii 287

[3] Kulchar G V and Reynolds, W J *J Amer med Ass* 1942, 120, 343

NINE LIVES OF STATUS LYMPHATICUS

AFTER a careful pathological and statistical analysis of 600 odd cases of either sudden death in apparently healthy people or death in people of 15 years or over who had an apparently glandular thymus, Young and Turnbull[1] in 1931 reported that they found no evidence that so-called status thymo lymphaticus had any existence as a pathological entity, and a leader in our own columns[2] seemed justified in announcing, without sorrow, the end of the status. A few years later Cohen[3] agreed that "the term status lymphaticus used in the coroner's court is a meaningless expression." Yet three years ago Taylor[4] reported on 14 cases in which the only explanation of death was in his view a general excess of lymphoid tissue, making it clear that it was this general excess rather than enlargement of the thymus which should be looked upon as predisposing to death from trivial causes. And now Millar and Ross[5] have satisfied themselves that one of the other characteristics of the lymphatic state—aortic hypoplasia—is significantly associated with accidental death. In a series of autopsies in which they measured the aortic circumference at a fixed level they first eliminated aortas with well marked atheroma, and those from obese, emaciated or œdematous patients, leaving 300 measurements for analysis, 26 being from patients dying as a result of accident. By applying multiple regression corrections, variations for height, age, weight and sex were eliminated, and it then appeared that the mean aortic circumference in the accident cases was 1 48 mm less than in non accident cases. From this Millar and Ross argue that aortic hypoplasia is connected, probably indirectly, with liability to accident, and even imply a connexion with "accident proneness." The argument is fallacious. We are told no details of the accidents, whether they were in air raid, factory or on the road. The existence of accident proneness is well established from close observation of the precise nature of industrial accidents; without detailed study of circumstances it would not be right to connect 26 accidental deaths with accident proneness as Newbold[6] understands it. Technical improvement in post mortem work is, day by day, finding causes for deaths which only 10 years ago would have been regarded as mysterious, and in the heyday of status lymphaticus would have been assigned thereto. Careful interpretations of data have elucidated deaths from functional causes like vagal inhibition, carotid and reflex,[7] and careful technique has established the unsuspected frequency of air embolism,[8] ammo embolism,[9] allergic death[10] and the like, all missed wi case. There may well exist, as Campbell[11] puts it, " condition of such lowered resistance and hypersuscept bility that the patient so affected is in danger of sudd death from trivial causes"; one feature of this conditi may be a type of aorta with narrowing and hypoplas of its wall, but the connexion between the two has to be convincingly established. And there is alwa *a cause of death awaiting detection.*

THE BRITISH STANDARD HÆMOGLOBINOMETE

THE British Standards Institution, which has alread done good work in drawing up standard specifications f the various pipettes used in hæmatology, has no tackled the hæmoglobinometer itself. British standa 1079 1942 gives the specifications for constructing standard Haldane hæmoglobinometer.[12] Both the tu into which the blood is put for dilution and that contai ing the standard solution of carboxyhæmoglobin a described and the colour of this standard solution defined. The standard solution is so prepared that, before, 100 per cent corresponds to 13 8 g hæmoglob per 100 c cm blood. A regular source of annoyance the past has been that hæmoglobinometer tubes were n interchangeable—even if from the same manufacture the blood tube had to be carefully checked against t comparator tube to ensure that the distance between t 20% and 100% marks corresponded; only too often did not. Adoption of the standard will stop this commo source of error. Since the manufacturers are represente on this organisation, it should follow that all hæmoglobi ometers will now conform to standard. *It is up to t* purchasers to insist that their hæmoglobinomet tubes should be marked "B S 1079," and to refuse a others. This will help to make hæmoglobin estimation truly comparable. The next task for the institution *to define standards for the next most popular hæm* globinometer—the Sahli.

STAPHYLOCOCCAL SCARLET FEVER

SINCE the early twenties, when the ætiological relation ship of the hæmolytic streptococcus to scarlet fever wa established by the Dicks and Dochez, it has been common experience among clinicians who use th throat swab as an adjunct to diagnosis *to find that* small proportion of clinically typical cases fail to yiel *Streptococcus pyogenes* from nose, throat or open infecte lesion. There are several possible explanations for th apparent anomaly—the swabs may have been inexpertl *taken (but repeat swabbings have proved negative),* th infection may be deep seated and inaccessible, th infecting strain of streptococcus may be a non hæmolyt variant such as Colebrook and his co workers[13] recovere from septic wounds, or the streptococcus may fail t grow or fail to produce hæmolysis under aerobic con ditions. Now that anaerobic culture is more widel practised it is not uncommon to find strains of *Strep pyogenes* which grow only, or much more profusel anaerobically than aerobically on primary culture, an there is point in the practice adopted in some laboratorie of inoculating the swab as a "pour plate" which ensure growth in the medium as well as on it and encourage both the growth and hæmolysin *production* of strains which are aerobically shy. With these obstacles overcome, it is probably a fair estimate to say that 98% of scarlet fever is due to an erythrogenic streptococcus. From time to time, however, evidence is adduced in favour of the staphylococcus as etiological agent, and this evidence is reviewed by Aranow and Wood[14] along with the report of a case of staphylococcal scarlet fever This was a girl, aged 13, who developed a scarlatinal syndrome as a complication of acute osteomyelitis with septicæmia (54 colonies of *Staphylococcus aureus* per c cm of blood) The rash was typical in character and distribution and was followed by general desquamation, there was a "raspberry" tongue, and the fever and toxæmia apparently responded dramatically to scarlatinal antitoxin A high antistreptolysin titre was found in convalescence A filtrate of the infecting staphylococcus grown in broth gave positive Dick tests in a dilution of 100, that is, the organism was poorly toxigenic compared with the scarlatinal streptococci, but its toxin was specifically neutralised by streptococcus antitoxin, and its activity was destroyed by heat at 61° C for one hour Other workers have isolated erythrogenic staphylococci from the throat or other sites in cases of non streptococcal scarlet fever, and Satake[15] reproduced the scarlatinal syndrome by injection of such a staphylococcal filtrate The erythrogenic toxin is apparently unrelated to the more common staphylococcal hæmolysin and leucocidin This evidence in favour of the staphylococcus as a rare cause of scarlet fever is perhaps in line with the broadening concept regarding erythrogenic toxins Instead of a single streptococcus and a single toxin, antigenically identical whatever its source, we now know that many different serological types (and possibly Lancefield groups other than A) of the hæmolytic streptococcus can produce erythrogenic toxin, and that streptococcal toxins of differing antigenicity are capable of producing scarlet fever

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[1] Young, M and Turnbull, H M *J Path Bact* 1931 34 213

[2] *Lancet*, 1931, i 593

[3] Cohen, H *Practitioner*, 1936, 136 2?2

[4] Taylor, J R *Proc R Soc Med* 1939 33 119

[5] Millar, W G and Ross, T I *J Path Bact* 1942, 54, 455

[6] Newbold, E M *J R statist Soc* 1927 90, 187

[7] Gardner, E *Med leg Rev* 1942, 10, 120

[8] Simpson K *Lancet*, 1942, i, 697

[9] *Ibid*, 1942, ii 490

[10] *Ibid*, 1941 ii, 319

[11] Campbell, F H *Penn med J* 1937, 41, 407

[12] B S I Publications Dept, 28, Victoria Street, London, S W 1 2s 3d post free

[13] Colebrook L, Elliott, S D, Maxted, W R, Morley, C W and Mortell M *Lancet* 1942 ii 30

[14] Aranow, H and Wood, W B *J A*[illegible] *med Ass* 1942, 119, 1491

SEEING IS BELIEVING

THE pathologist is not always right even if, speaking broadly, he has a good pull over the clinician One of the happiest hours in the Swiss medical student's week was the Saturday midday when that brilliant pathologist Ernst Hedinger put the dead "meat" on the table and challenged physicians and surgeons to justify their in vivo impressions The pathologist however does not often get the chance of checking up a long series of clinical diagnoses with the post-mortem findings For nearly 30 years it has been the custom at the Royal Adelaide Hospital for the house surgeon to fill in a request card when he obtains permission for autopsy On this card is written the clinical diagnosis which it is presumed would have been placed on the death certificate had there been no autopsy Prof J B Cleland has analysed[16] 2500 of these entries and finds that the clinical diagnosis was right (or reasonably so) in 67 8%, partly right in 12 4%, wrong in 14 6%, whilst in the remaining 5 2% no diagnosis was made or the nature of the lesion remained obscure even after autopsy It should be borne in mind, he says, that in a large general hospital many patients are admitted in extremis, or die before a proper examination can be made In 89 cases at least of the 362 in which the clinical diagnosis proved wrong death had occurred on the day of admission to hospital or on the following day Some of the larger groups of diseases are analysed in detail Thus it was noted that in malignant disease the number of cases missed was nearly but not quite counterbalanced by those in which it was suspected but not present In cardiac infarction a correct diagnosis was made in 80%, the instances in which this condition was present but not diagnosed were counterbalanced by those in which it was diagnosed but not present Cerebral hæmorrhage and cerebral softening were usually correctly diagnosed, but more cases of softening were diagnosed as hæmorrhage than the other way round Of wrong diagnoses, failure to recognise pneumococcal peritonitis stands out in the list as most important, most pathologists would agree that this is often missed Of the rest, general peritonitis due to perforation, bronchopneumonia as a cause of coma, chronic fibrosing pulmonary tuberculosis with pleural effusion simulating heart disease, are diagnostic snares which routine autopsy is apt to reveal On the whole Professor Cleland's figures bear out the adage that the common things are commonest

NORTHERN ROSES

HIP COLLECTING has become a scientific pursuit In an address to the Pharmaceutical Society on Dec 10, Mr R Melville, PhD, botanist to the Royal Botanic Gardens, Kew, recalled that we learned of the vitamin-C content of hips mainly through Russian researches In a survey of British roses made last year with Pyke[1] he found that the vitamin-C values of the hips of different species ranged from 1260 mg per 100 g in *Rosa mollis* to 80 mg in *R arvensis* In addition to *R mollis*, the species with the highest content were *R sherardi*, *R coriifolia* and *R afzeliana*, and these four only form an appreciable part of the rose population north of the Lake District, which explains why Scottish hips have given a much better yield of the vitamin than those gathered in the south These species also happen to be among the earliest to ripen, but there is no true correlation between vitamin-C content of the hips and early ripening, since some of those species which ripen first have a poor content of the vitamin The real correlation is probably with the length of day in the period just before ripening, for this fits in with the latitudinal correlation noted by both English and Russian workers To avoid loss of vitamin the hips should be processed with as little delay as possible, but if they must be stored the temperature should be well below freezing point Melville has found that cool storage at temperatures round about freezing point is not satisfactory, there are appreciable losses of vitamin during the first three weeks, and though a fairly steady level is maintained during the second month the content drops again rapidly in the third month The initial losses were greatest in over-ripe hips, and it is thus important, he pointed out, to stop the collection of hips before they begin to show signs of softening To travel well and withstand delays they should be full red but quite hard

HISTORIAN OF THE IMS

Colonel D G Crawford, who died at Ealing on Dec 9 at the age of 85, has left his own memorial Born at Chinsura in 1857, his father being a member of the Bengal civil service, he qualified at Edinburgh in 1881 and entered the IMS the same year He retired in 1911, rejoining for five further years on hospital ships during the late war His *History of the Indian Medical Service* (1600–1913), published in 1914, throws many curious sidelights on old-time Anglo-Indian life, but its main purpose was to record the evolution of a homogeneous service from the small beginnings of the 17th century True to British precedent, early mistakes were made good and utilised to achieve order and success In Emerson's words, which Crawford was wont to quote, they builded better than they knew Crawford's history ranks with the best of the many regimental histories of the British Army, and in 1930 he completed his *Roll of the Indian Medical Service* How he found time in the short human span to collect his knowledge and compile these rolls is easy to ask but can only be answered by those aware of the self-sacrificing devotion entailed, and Crawford found time also to be generous, for he contributed many notes about the Army Medical Service which have yet to see the light in an addition to Johnston's roll

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[15] Satake T *J orient Med* 1927, 6, 17 (quoted by Aranow and Wood)

[16] *Med J Aust* 1942, i 579

[1] Pyke, M and Melville, R *Biochem J* 1942, 36, 336

Special Articles

NUTRITION AND ECONOMIC POSITION OF CEYLON

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THE first nutritional surveys in Ceylon were carried out in prisons and other institutions where clinical signs of malnutrition were found to be prevalent In the latter part of 1933 and the early months of 1934 similar surveys were done in numerous schools throughout Ceylon In these early surveys most attention was paid to two signs of dietary deficiency follicular hyperkeratosis (phrynoderma) and "sore mouth" The former follows vitamin-A deficiency, and the latter, which includes angular stomatitis and eroded tongue, follows a deficiency of riboflavin Both were prevalent among the primary-school children—phrynoderma in 29% and sore mouth in 8 3% [1]

During 1934 and 1935 a severe epidemic of malaria occupied the attention of health officers of the medical department, but from 1936 onwards increasing attention was paid to malnutrition Qualitative dietary surveys showed that the diets of the poorer classes consisted of parboiled rice and very small amounts of pulses, fish, and vegetables, too highly laced with chillies and other potent currystuffs

Lectures on nutrition with special reference to local conditions were given to the medical officers, and with the establishment of a division of nutrition in the Medical Department lectures were given to all sanitary assistants and health nurses Stress was laid on the need for more variety in the diets of the labouring classes and an increase in the consumption of pulses, vegetables (especially green leaves) and fruits, and above all on the need for more milk for children Public lectures were given and posters displayed A pamphlet detailing the faults of labourers' diets and the methods of improving these was circulated to every estate superintendent in Ceylon The subject was taken up in the State Council and large sums of money were voted for a midday meal in schools attended by the more indigent children There was little doubt that the country was becoming alive to the importance of nutrition, and this was reflected by a great increase of leafy vegetables and other foodstuffs in the urban and rural markets of Ceylon

About two-thirds of the rice and much of the dried fish and pulses consumed in Ceylon are imported The production of money crops in preference to food crops may lead to greater prosperity in times of peace but gives rise to a serious hazard in war Since the outbreak of war the efforts to increase the internal production of foodstuffs have been redoubled and the government has spent much money in bringing this about Large surveys were carried out in the latter part of 1938 and the beginning of 1939, and again in 1941 and 1942, the results are compared with those found in 1933 in table I

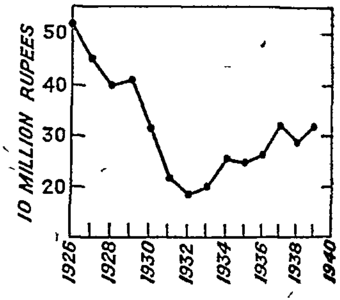
TABLE I—INCIDENCE OF CLINICAL SIGNS

Year	Children examined	Phrynoderma	Sore mouth	Bitot's spots
		Cases and per cent		
1933–34	3792	1101 (29 0)	314 (8 3)	
1938–39	5184	205 (4 0)	676 (13 4)	91 (1 8)
1941	3420	18 (0 5)	246 (7 2)	30 (0 9)
1942	3823	11 (0 3)	78 (2 0)	30 (0 8)

We have carried out parts of the surveys independently since 1934 and the results were consistent

The economic position in Ceylon must be considered in reference to this astonishing decrease in two signs of malnutrition The years 1925 to 1927 were boom years and the years 1928 and 1929, though there was a little falling off, were prosperous, but in 1930 there were signs of a slump and in 1931–33 Ceylon was suffering with rest of the world from a severe economic d The figure shows this well The principal exports tea, rubber and coconuts, and these, having reached total value of 509 million rupees in 1926, fell to a value 173 million rupees in 1932 The exports of a cc cannot fall in value to 35% of the previous total w all classes of the population being affected in one or another

Imports fell more or less pari passu with the exp but the labouring classes are mainly concerned with imports of foodstuffs It is necessary to consider the in the amounts of foodstuffs which were imported and not their value, because the latter fell during the slump. In 1929 the amounts of rice and dried fish imported into Ceylon were 10 62 and 0 339 million cwt and these figures fell to an average of 9 63 and 0 307 during the years 1931 to 1933 Amounts gradually rose, and in the last prewar year (1938) had reached 11 13 and 0 380 million cwt The fall in the amounts of the imports of foodstuffs had been more than 10% when allowance is made for the growth of the population, with the return of better times these imports increased by about 15% over the slump years



Exports from Ceylon, 1926-39

The value of foodstuffs fell considerably more than the rate of wages Rice averaged 27½ rupee cents per measure for the first 5 years (1926–30), and from 1932 to 1938 it has averaged just under 16 rupee cents The price of dhal averaged 21 rupee cents during 1926–30, and afterwards was steady at 13 cents to 1938, and there were similar declines in the values of all other foodstuffs The rate of wages fell from 10 to 20%, but there was an even greater fall in the value of foodstuffs, being for the more widely used comestibles such as rice, dhal and fish 30–50% These falls are shown in table II

TABLE II—PRICES OF PRINCIPAL FOODSTUFFS AND WAGES

Year	Rice cents per measure	Dhal cents per measure	Dried fish cents per pound	Wages * cents per day
1926–30	27½	21	29	52
1931	21	13	30	52
1932–38	16	13	19	45

* Wages vary in different districts

DISCUSSION

Phrynoderma and sore mouth have been found to be valuable indices of the prevalence of malnutrition among the school-children in Ceylon The considerable fall in recent years in the prevalence of these signs has followed activities by the Medical Department to make people mindful of nutrition, a midday meal to the more indigent children, efforts by the Agricultural Department to encourage a far greater production of foodstuffs within the country, and the appearance of increased amounts of more approved types of vegetables in the market Equally, however, the fall has followed improved economic conditions, and, as the first surveys were made just after the depression, the prevalence of signs of malnutrition then found was probably due to the depression

It is impossible to decide how much of the improvement in nutrition of children has been due to direct action by various departments and how much has followed improved economic conditions, but it seems likely that economic improvement has played the greater part This does not imply that the medical efforts are not of great importance

The war has come nearer to Ceylon, and strict rationing has been introduced The state of nutrition of the labouring classes will be watched by repeated inspections of school-children for phrynoderma, sore mouth and

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1 Nicholls, L *Ind med Gaz* 1933, 68, 681, 1934 69, 241

r signs Signs of dietary deficiency which have been found valuable in nutritional surveys in the tropics will probably also be useful in assessing the state of nutrition of the people of the distressed countries of Europe

GENERAL MEDICAL COUNCIL

WINTER SESSION, NOV 24–28, 1942

(Continued from p 708)

The Premedical Examination

Dr R J **Brocklehurst** presented a draft memo from the subcommittee appointed to prepare evidence for the departmental committee of the Board of Education, presided over by Sir Cyril Norwood The first question asked had been "What are the defects in the present school curriculum from the point of view of equipment for the medical profession?" Replies from licensing and other bodies had emphasised the poor standard of English of entrants to medical schools, most of them had stressed the undesirableness of premature specialisation in the premedical subjects when at school It was suggested that the reason for this was the desire to take the 1st MB from school, and to get scholarships in its subjects The proposal made was that the general education of the future medical students should differ in no way from that of their fellows, they should receive a broad education, including the general principles of physical and biological science Attention should also be called to the dearth of scholarships for medical students, which made competition keener

The second question was on the preclinical studies, and whether the 1st MB should be taken from school or later The replies showed a preponderance in favour of taking this examination and its course from a medical school, either wholly or after preliminary studies at school The committee realised that some schools were better equipped than others to provide this course, and that it would not be fair to exclude the possibility of taking the examination from school, provided there was an assurance that the general education had reached a sufficiently high level before specialisation began It was, however, preferable that at least a part of the 1st MB course should be taken at a medical school This would ensure uniformity, it was not the custom of the council to insist on uniformity in matters of this kind, but those who supported this view felt that if pupils came from a large number of different schools there was no guarantee that the standard attained would be substantially the same More important as a reason was that the teaching of 1st MB subjects should have a definite medical trend, in schools future medical students were in a minority and the teachers were not in touch with medical needs In a medical school the teachers of physics, chemistry and biology were in close touch with teachers of the professional subjects

Sir **Farquhar Buzzard** thought that one of the chief causes of early specialisation was the scholarship and the competition between schools He urged that scholarships should be awarded for merit, and should bear no relation to the future career of the student The choice of medicine could be made after the award In no other way would the right kind of medical student be selected

The **President** pointed out that most of the educational scholarships available throughout the country were earmarked for other subjects, and very few were available to medical students

Time pressing, the report was accepted as a draft of evidence to be given by representatives of the council, subject to verbal amendment on the lines suggested in the discussion

The Pharmacopœia

Dr **David Campbell**, chairman of the Pharmacopœia Committee, said that in the last few days it had been possible to get a promise of enough paper to publish some copies of the BP, and he hoped they would be available in 1943 A sixth addendum was likely to be soon needed Research in the BP laboratory had included work on sulphonamide ointments, standards for kaolin administration, and a method of assessing particle size. The multiplicity of names for the same substance had caused difficulty to medical men and pharmacists, and the BP Commission had published lists of approved names and a memo indicating the lines upon which names would be selected in the future

Further Charges against Medical Practitioners

IMPROPER CERTIFICATION NOT PROVED

In the case of *Michael Murphy*, MC, registered as of 2, Undercliffe Lane, Bradford, MB *Glasg* (1913), the charge was that he issued two certificates, on Dec 22 and Dec 29, 1941, stating that Mr Wilkinson, a constable in the City of London Police War Reserve, was suffering from gastro-enteritis and unable to follow his occupation, that he did not make any or any proper professional inquiries before writing the certificates, and in fact Mr Wilkinson acted as a chorister at St Paul's Cathedral on ten occasions between Dec 23 and Jan 4 The complainants were the City of London Police

Respondent was accompanied by Mr Oswald Hempson, solicitor who said that his client had no memory at all of this case It was quite impossible for a doctor to control the activities of his patients or to check a statement about diarrhœa The patient's duties involved an 8-hour stretch of duty which would be impossible for one suffering from enteritis Mr Hempson protested that a fuller inquiry into the facts of the case ought to have been made by the police and the council before submitting his client to the ignominy, inconvenience and expense of answering a charge He read a statutory declaration from Mr Wilkinson, affirming that he had suffered from diarrhœa at the time and that he had not told the doctor (who was a locum tenens in the practice) that he was a chorister He was fit to go to half an hour's choir-practice after spending the morning in bed, but not to do police duties He had subsequently been diagnosed as subacute appendicitis He had been dismissed from the police force for attending choir-practice while under medical certificate, and was now on night work which made it impossible for him to attend before the council

The council did not find the charges proved

ERASURE IN RESPONDENT'S ABSENCE

In the case of *William Lyle Paterson*, MC, registered as of 140, W Granton Road, Edinburgh, LRCPE (1916), the charge was that he issued a certificate on April 23 1942, stating that the condition of Mrs Henderson, wife of L/Bdr Henderson, was such that her husband should if possible be stationed near home, that he wrote to the military authorities on the same day confirming this certificate, saying, "Mrs Henderson is in a rather pitiful state of nerves mostly due to air-raids She is not, in my opinion, capable of looking after her children I most strongly recommend that her husband be stationed near at home", that he had not seen or examined Mrs Henderson for at least a year before April 23, 1942, and did not examine her before writing the certificate and letter A further charge was that when, on Oct 7, 1942, Dr Paterson visited Andrew Munro of Edinburgh in his professional capacity he was so far under the influence of drink as to be incapable of properly carrying out his professional duties towards him

Respondent was not present, nor was he represented Mr Winterbotham called his managing clerk, Mr Jones, who described how he had gone to Edinburgh to see the doctor and try to persuade him to attend, or give a proper answer to the charges Dr Paterson had said he could not afford to attend or to instruct a legal representative He admitted giving the certificate, saying that he had been asked by Henderson to keep an eye on his wife and to give a certificate if asked He had seen her in the street and twice at her house, and had formed his opinion of her He had shown her the certificate, and had been paid 2*s* 6*d* for the visit and 1*s* 6*d* for the certificate His records had been lost in a recent removal

Mr Winterbotham read a statutory declaration from Mrs Henderson, stating that, though Dr Paterson had formerly attended her, she had not seen him for over a year, and had never seen the certificate There had been no talk of her going to hospital in April of this year, though there had been earlier

In respect of the second charge, Dr Paterson wrote denying it completely and asking why no complaint in respect of it had been made to him He was not, he said, a heavy drinker, but drank only mild ale Mr Winterbotham said that the relatives of Andrew Monro declared that the doctor was drunk and dazed and did not know if the patient's leg was broken or not Monro's sister had sent for an ambulance after the doctor left and the patient had gone to hospital, but returned home the same night Sergeant Norman Gordon of the Edinburgh City Police testified that he had received a report on this case at 4 45 PM and had called to see the doctor about 5 10 PM There was nobody in, but he had traced the doctor to a public-house nearby and had come to the conclusion that he was then drunk , he was unsteady, his voice thick and his coat stained Witness had not smelt his breath The doctor denied ever having been to the Monro's house, but witness had later collected from the house a prescription for powders and ointment that the doctor had left there A statutory declaration from a constable supported the sergeant's evidence Mr Jones, recalled, said that the doctor had no recollection of this incident When witness had called at 1 45 (the surgery hours being 2–3) he had found a notice on the door " Back in half an hour " He also had traced the doctor to a public-house He was sober, but in a very degenerate state—dirty, unshaven, without collar or tie The surgery was very untidy The doctor looked " soaked " and was vague and " doped " He said he had cared for nothing since the death of his wife two years ago and the news recently that his son of 15 was missing, presumed drowned

The council found the charges proved, and the Registrar was directed to erase from the Medical Register the name of William Lyle Paterson

Five names were, after deliberation in camera, restored to the Medical Register *George Holman*, *Joseph Stenson Hooker*, *Benjamin David Lang*, *Andrew Thornton* and *John Mackay Young*

MEDICINE AND THE LAW

Inquest dispels Criticism of Hospital

NEITHER for the first time nor for the last a coroner's inquest has performed the useful function of ventilating the complaints of relatives against the treatment of the deceased in hospital Criticism was offered by the widow and brother The widow said that her husband was transferred to the Radcliffe Infirmary from the Hospital for Diseases of the Heart at Maids Morton She telephoned to the infirmary, asking if she could see the patient on the following Monday She was told that she could, but, when she arrived, she found that an operation had been performed without notice to herself and that her husband was dead The brother complained that the hospital authorities, knowing that the widow was on her way, should have awaited her arrival before operating , that the condition of the patient's heart made operation inadvisable , and that the patient was not in a fit state to sign the form agreeing to the operation In view of these complaints the coroner adjourned his inquiry so as to be able to obtain the fullest information , he furnished the relatives with copies of the medical evidence so that it could be considered by them in consultation with the family doctor Medical witnesses explained that the patient was admitted suffering from retention of urine He was treated for this condition and tests were made An anæsthetic was thought advisable Except that the patient suffered from a bad heart, there was no reason to fear danger Dr. Oliver Lloyd, assistant pathologist, stated that, although there was evidence that the patient would almost certainly have died in the near future, it was probable that the anæsthetisation slightly accelerated death The operation was necessary for his immediate relief , there was no indication of any want of due care or skill , death was due to acute pharyngitis, bronchopneumonia and congestion of the heart

When the inquest was resumed after the adjournment, there was further medical evidence that the anæsthetic was justified as the only chance of prolonging life Dr F G Hobson, honorary physician at the infirmary, said that he found the deceased was not a good subject for a general anæsthetic owing to the cardiac condition , he so reported, but there were cases when the risk had to be taken The relatives withdrew their criticism, the widow saying that she now knew that it was not so much an operation in the true sense of the word as an examination The brother said they now thought that the action at the infirmary was right in the circumstances The jury, finding a verdict in accordance with the medical evidence, exonerated the medical staff and exp satisfaction with the care taken Thus once agai coroner's inquest justifies itself Those who still d its abolition would have to invent something similar for its replacement

In England Now

A Running Commentary by Peripatetic Correspond

CAIRO at the moment is one of the most ama cities in the world It is packed to overflowing the most extraordinary medley of people, and th only about 100 miles from the front line life goe as though the war did not exist Indeed, but for swarms of troops in the streets and the 'planes overh it would be quite possible to forget the war for an or two As the place is one of the holiest of Mu cities it has not been bombed, presumably becaus as well not to offend the whole of the Muslim w without getting some advantage out of it The be its mosques rival those of Stamboul and the med quarter of the city delighted me , imagine a dense work of narrow winding streets, each one given up special craft and called after it, filled with men squat in the front of their open shops hard at it The in the Street of the Coppersmiths is deafening , dirt, flies, people everywhere I like my squalor t alive

One thing I had not expected, because I'd n thought about it, and that was traces of the Napole occupation, but there are many , cannon balls bu in the wall of Hassan's mosque, the fort built on Mokattam Hills, and better still, Shepheard's built on site of the house he first lived in which he took the A fearsome place Shepheard's, packed with rese which caused the Germans much apprehension du the advance on Alexandria, so they said on their wire whereas the defences of Egypt gave them no anx whatever ! You can realise how painful is the lot civilian living among these reserves One day I waiting for a lift when a major dashed up , with bo head, hat in hand, I silently motioned him in f " Go ahead " he shouted cheerily and as we shot up bellowed " speak English ? " It was clear that meant well, he wanted to give the poor dog a leg I looked at him for some seconds with the defac interest of an entomologist looking at a new specie louse and then I said gently, " Sir, every comp gleaming fibre of me is English except 50% which Irish, and I speak the language with elegance, viva and precision " The major, who was quite mottled this time, spluttered, " My dear chap so e to make mistakes nowadays chaps at sea Nordic features beards Irish blood r self ! " We parted friends, but I left Shephea within the hour and plunged into the Suburra of Ca where I felt much more at my ease

After some days in Cairo I went up the river to Luxor and Karnak Until you have seen the Nile can't realise how it *is* Egypt We grow up on a s of " It flows through old hushed Egypt and its sa Like some grave mighty thought threading a drea picture of it, and leave it at that, but it's only when y have followed the river for some hundreds of miles a watched the Arabian escarpment to the east, the Liby to the west, with glimpses of desert beyond on bo sides, that you understand how the 16 million Egypti exist It is strangely beautiful country , the ri was falling, but there was still much water about in t irrigation channels and every now and then a great la dotted with clusters of mudbrick houses surround by date palms Every possible square inch of the riv basin is cultivated and the country was green with you corn and millet Flocks of egrets, ibis and bee eate and camels doing all sorts of work everywhere (nas supercilious beasts , I hate them)

Luxor and Karnak are too overwhelming for a sho visit Unfortunately it wasn't " the season " (not th seasons of that sort still exist in Egypt) so the pla was deserted My dragoman, a dear one-eyed Ara Moustafa Khalil, used to start the day at 8 AM a we went round in a battered old arabieh drawn b two horses which were just skin and bone By noo the shade temperature was 98–99° F but dry heat, and everyone made for what shade there was In the Valley of the Kings, which is on the edge of the Libyan Desert and is itself desert, it was impossible to do anything after noon What fighting must be like in such conditions I shudder to think. Hieroglyphs are much lovelier to look at than I had thought they would be In the finest tombs their colour and outline are incredibly well preserved, and as I had expected some of them closely resemble their Chinese counterparts

An exhausting train-journey took me back to Cairo the day after Ramadan had ended The carriage was packed and everyone was friendly and willing to write Arabic, which pleased me and taught me the alphabet The number of one-eyed people in Egypt must be a record for any country, I began to think half of them had had trachoma The dust is very trying to us, but *doesn't seem to* affect them in the least The number of pock-marked faces in adults is also strikingly high, but presumably they are vaccinating better now for the young are unscathed

I was tired of ships and the sea so I flew on from Cairo Flying is much too good to be true, you peer down at this magnificent panorama which is unrolled beneath you, you have a vivid picture in your head of a coast-line, and yet *you're furious when the expected bump appears* and is in fact Mt Carmel I must fly more, it still seems much too unreal to me For following a campaign you cannot do better than fly I sweated through the desert with the French to El Arish, I stormed Jaffa and massacred everyone in sight I gloated over the fruit of Nablus and I was held at Acre by Sidney Smith I was so excited by Acre that I shouted “ There's Acre ” and was promptly crushed by a general sitting next to me Then the spike of Cyprus loomed up on the horizon, pale, pale yellow, the island seemed to leap up at us, and ten minutes later I landed completely deaf The doctor and a sanitary inspector called Homer met me ! “ Was Zeno really born here ? ” I said, and they rocked with laughter

Twenty-five miles by road up to Nicosia through arid desolate looking country, into the Kyrenian range far away to our north Cypresses and olives again, no crops yet, though we grow much of our own barley Nicosia I reached as dusk was falling, a little walled city in the middle of a plain It looked very lovely with its minarets outlined against the fading lights Cyprus seems to be full of walled cities and superbly preserved medieval castles Think of an emergency hospital in one of the finest castles in Europe—vaulted rooms with stone slabbed floors and walls many feet thick I don't know much about medicine here yet, but I have seen a little schistosomiasis and leishmaniasis and Cooley's anæmia

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Before the war I went as surgeon on a cadet ship to the Antipodes The skylights of the boys' washing place were just outside my cabin and their voices and the sound of splashing waters came clamouring up to me In this ablutionary parliament what I admired most, apart from the rounded beauty of the oaths was the downrightness of the judgments “ Young Watson ” was “ an utter squirt,” “ a septic blister, and ”—never or—“ a dirty piece of toe fug,” or the Mate was “ the fore end, the after end, the bight of ”, apparently they had been reading about dysentery All this condimented with the usual body-fluid adjective and the onomatopœic participle, rather in the same way as the Greeks used *μεν* and *δε* In war, which in many other ways too is a return to adolescence, we class people as either black or white, drawing from the pent-up wisdom of the ages which taught that those who are not with us must be deemed against us, for a neutral in one's rear might be lethal That is why the Darlan business has rankled in the public mind Most of us can still hear the Prime Minister's voice lashing his name like a bullock whip Whatever the logic of the matter, I doubt whether any leaders can afford to ignore the instincts of their people

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By an extraordinary coincidence I have exchanged a view, from my hut, of Mt Hecla in Iceland for that of Mt Hecla in the Outer Hebrides Hecla is Norse for hood, and in Iceland refers to the cloud-cap Before I came home I had yet another trip into the interior—by car from Reykjavik to visit Gullfoss and Geysir At that time Geysir was erupting punctually at 6 PM every day, so we arranged to visit Gullfoss, in a neighbouring valley, first, and reach Geysir in time for its display of a column of boiling water 200 ft high Gullfoss is a magnificent double waterfall in an almost right-angled bend in the glacier-fed Hvita (White River). One can stand opposite the falls at such a height that the surface of the river above the falls is a little lower than one s eyes That part of the river is in open country with low banks, and the water seems to be rushing straight at one But it suddenly falls over a high ledge running diagonally across the river and seethes and rages over tumbled rocks until it meets another, very deep, cliff running across the river on the opposite diagonal to the first Here the whole river plunges into a dark chasm, whose bottom cannot be seen, and an immense cloud of spray is thrown up to produce a glorious rainbow in sunshine Below the falls the river runs in a deep and narrow gorge When we reached Geysir we found that a party had arrived about 4 PM, and produced artificially a premature eruption by casting 150 lb of common household soap (no coupons required) into the monster's maw So we had to content ourselves with throwing two bars of soap *into a smaller edition, called Smith, which soon began to* boil and bubble, becoming troubled like the pool of Siloam, and finally shot up a column of hot water about 8 ft high Besides these two there are scores of other hot-springs close by, and new ones open up, while old ones close down A famous one, called Strokhur, is now dead and looks like an underground railway tunnel diving vertically There is also a hotel, with gymnasium, hot swimming-pool and glasshouses warmed by hot-springs We drove thence to Thingvellir, past roadside pools mantled with thousands of minute golden water-buttercups and past a horrific lava-field and imported reindeer It was one of those days on which the sun did not shine boldly but filtered through light cloud, allowing the colour tones of Icelandic landscape to appear at their best The roads were a bright deep red, being gritted with baked lava The fields were tawny and various shades of green The lower slopes of the mountains were covered with grey, green or golden mosses The far-away mountain tops stood out deep purple or dark blue, slashed here and there by pure white glaciers Nowhere have I seen such marvellous colours in landscape Nevertheless give me the trees and woods of England, where the scenery is warm and friendly, not naked and hostile

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Just as the 9 o'clock news began I was summoned by telephone to see the young wife of Eves, our idiotic grocer, who was reported to be terribly bad with hæmorrhage I leapt upon my trusty bicycle and arrived to find a very healthy-looking young woman with a pulse-rate of 70 who was having a rather profuse period No, she hadn't missed any, but when she was 16 she lost a lot and the doctor had kept her in bed for three months “ But that was hæmorrhage, doctor This isn't hæmorrhage, is it ? ” “ *Of course,* it is,” I explained “ Hæmorrhage only means bleeding If you cut your finger you get hæmorrhage ” “ Yes, but this isn't from the womb ” “ Yes, of course it's from the womb I'll give you an injection for it ” “ Oh, no, I won't have an injection, thank you ” “ Why not ? ” “ Well, I've never had an injection before ” There didn't seem to be any answer to that one so I tried another tack “ Why did you send for me ? ” I asked “ Oh, I just wanted to be reassured that it wasn't hæmorrhage ” I insisted on the injection which *she* insisted made her arm feel numb Throughout the performance her husband, imbecile and adoring, held both her hands “ You'd better have a baby,” I said, “ that would stop all this nonsense ” “ Oh, doctor,” she giggled, “ you're putting ideas into my head ! ” “ Impossible,” I muttered as I swept out

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Certified causes of death in Denmark for the first quarter of 1942 were Infant disease 566, meningitis 10, scarlet fever 14, whooping cough 28, diphtheria 17, measles 10, poliomyelitis 3, encephalitis 7, tuberculosis 347, cancer 1579, cardiac and vascular disease 2714, chronic alcoholism 14, violence 312 and suicide 133

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M.P

Mr Bevin, introducing the new National Service Bill, spoke of the gravity of the man-power situation and the necessity of full military training before the age of 19 when young men may be sent overseas either in units or as reinforcements To get the preliminaries of call-up and medical examination finished before the eighteenth birthday an earlier call-up, after examination at $17\frac{8}{12}$, is needed

Many members expressed disquiet and the debate turned almost wholly on educational and allied matters and not on the bill itself There will be sweeping changes in university life Medical, dental and some classes of scientific and technical students will continue their studies, but for the most part all arts courses will go, although there will be women, unfit younger men and older men still able to carry on The bill also affects older men to some extent There is no guarantee that men over 37 will not be called up if they are needed for special jobs But the modern army demands youth Even senior administrative officers are looked at askance as they approach the fifties and in the infantry, commando and other active units people may be heard being seriously perturbed over "old men" of 31 Britain gearing up for still greater offensive action needs a physical machine of the highest standard of fitness

Another piece of legislation just passed is an amendment of the legislation dealing with workmen's compensation The anomaly of the dust disease of the lungs which is caused by something other than silica has been removed All forms of pneumoconiosis will in future come under the Workmen's Compensation Act in so far as they are within the purview of the report of the medical inquiry published earlier this year Mr Grenfell, former minister of mines, welcomed the proposals but thought we had not yet come to the end of the road And in this he is right not only for miners and quarrymen but also for others working in great amounts of dust The special fund created to enable men who have left the industry, and are yet affected by pneumoconiosis, to claim compensation is a valuable extension of social insurance

Other anomalies of workmen's compensation are also remedied in this bill but when Mr Clement Davies said that the Workmen's Compensation Act was obsolete and out of date as compared with those of other countries he was coming near to the truth But the atmosphere of the debate was as it were charged with knowledge of the Beveridge report which puts workmen's compensation into a new perspective as part of an all-embracing social security scheme When the Beveridge scheme does come up for discussion in January or February the workmen's compensation part of it will be important

Another debate promised for the New Year is on medical relief for Europe on the cessation of hostilities The Leader of the House was asked about this at question time and is known to be willing for a debate to take place if the priority demands of other business allow Mr Dalton, president of the Board of Trade, has taken this subject under his wing and a great deal of work has been going on behind the scenes

FROM THE PRESS GALLERY

Debate on Venereal Disease

In the House of Lords on Dec 8 Lord **Winster** opened a debate on the increasing incidence of venereal diseases in this country which is causing widespread concern among members of both houses Although the increase, he said, was not so great as during the last war, the position was serious and urgent During 1941 7300 new infections of syphilis among civilians were treated at clinics Experience showed that there were eight cases of gonorrhœa for one of syphilis, which would give 60,000 cases in that year, a total of upwards of 70,000 new infections in 1941 These figures showed that during the war syphilis had increased by 50% among civilians, and adding the Services the increase was about 70% But so great was the secrecy surrounding these diseases that this might well be an under-estimation Many of the young Service people from overseas from countries where notification of these diseases compulsory Lord Winster felt that we had a duty them to do something more than issue a regulation the limited scope of 33B Medical knowledge adequate, but continuous and early treatment must assured Lord Winster admitted that the Ministry Health had watched the situation carefully, and treatment facilities in the big towns were now rea satisfactory, but he contrasted our rather f publicity with Scandinavia's realistic and suc propaganda The British Council for Social H felt that there were still gaps in the treatment which ought to be filled before compulsion was r to In the meantime regulation 33B was a step in right direction, but it could only operate when mischief existed in an aggravated form, and it only on treatment and cure We heard much in these days about freedoms, but he did not think these freedoms should include freedom to spread disease among innocent people and children

The **Archbishop of York** approached the problem from the religious rather than the medical point of view, but as he pointed out there need be no inconsistency between the two The Churches would support a bold and enlightened policy of education provided that prevention and avoidance of promiscuity was urged as the best safeguard of all There should be more treatment clinics and local authorities should be encouraged to employ more women police He had doubts about the practical working of regulation 33B, and he questioned whether it was possible to enforce compulsory treatment in our crowded country While there was any chance of voluntary action succeeding he was against compulsion, but if the diseases continued to increase it would be the clear duty of the Government *to consider compulsory notification for the civilian population*

Viscount **Dawson of Penn** said the increases were chiefly in the ports , in seven ports comparing 1939 and 1941 there was a rise from 942 to 1909 Among civilians there had been a steady increase of treatments among women—45 9% in syphilis and 29 3% in gonorrhœa Thus we were not dealing with the same problem as our forefathers even in the last war The women open to contract these diseases belonged to more classes than they used to do The prostitute class, who gained their livelihood by promiscuity, was decreasing The so-called amateurs were most dangerous because they were likely to give disease where it was least expected But there was an increasing number of venereal infections among girls of good repute, who would no doubt later become mothers If good treatment was available he was sure both women and men would take advantage of it We had precise knowledge both of the cause and of the treatment of syphilis and gonorrhœa Both started as local diseases, and this gave a good chance of catching them up, but if neglected they tended to become constitutional During the last war there was an outcry against a proposal to set up preventive ablution centres because of the old principle "you must suffer for your own deeds" The problem was solved with a characteristically English evasion and the centres were renamed "early treatment clinics" Lord Dawson was convinced that fair and considerate attention given to a man or woman's body never had anything but good effect on that person's mind, and he could not see how this illness could logically be treated except under the public health acts in the same way as other infectious diseases Since 1936 health authorities had power to take care of people if they were unable to take care of themselves If a person was verminous or suffering from scabies that person could be taken for treatment to a public institution Likewise an infectious patient could be removed from a factory, then why should not the same system be applied to venereal disease? There were two difficulties Up to now venereal diseases had not been notifiable, and he agreed that if notification was insisted upon people would be more frightened and anxious lest they should be discovered But treatment was different There was a hard core of irresponsibles that must be dealt with In his judgment 33B was a right and wise regulation from which a further step could be taken if necessary Lord Dawson spoke ly on the need to preserve secrecy That was one his reasons for hesitating to support compulsory ation Since secrecy was promised some years in connexion with venereal disease there had been he ght, three occasions on which secrecy had been thrust aside in a Court of Justice There was the Guildford case, where a man was asked to produce the secret books of a clinic If only a medical man would refuse to violate secrecy in these cases it would bring the whole business to an end In his view it was worth while to consider soberly the general question of medical privilege involved Lord Dawson declared in favour of the establishment of more clinics, but reminded their lordships of the grave depletion of the medical profession at the present time He was confident that the best that could be done was being done

Lord **Atkin** thought that regulation 33B was moderate and modest in form He was prepared to go further A professional prostitute found soliciting, who was infected with VD, ought to be compulsorily treated It ought to be made an offence for anybody who had reason to believe that he was suffering from VD not to submit himself to treatment Once a patient had been to a doctor or a clinic it should be easy to secure continuity of treatment by law Lord Atkin considered that medical privilege was a national necessity

The **Bishop of Norwich** in a maiden speech said that he understood that in England outside of London there were 160 venereal disease treatment centres before the war Today there were 175, an increase of only 15

Lord **Mapley** admitted that education in prevention was a difficult subject but suggested it is always better to put up a fence at the top of a precipice rather than provide an ambulance at the bottom

THE GOVERNMENT'S POLICY

Lord **Snell** said the official policy in relation to venereal disease was effectively to control it and if possible, to destroy it It was based on the principles laid down by the Royal Commission of 1913–16 voluntary attendance for treatment, free treatment available for everyone, free laboratory facilities for diagnosis for all practitioners. prohibition of treatment by unqualified persons, education of the public At present there were 249 clinics in Great Britain where free and confidential treatment was given, 18 new clinics had been opened since the war began 5 were now being prepared and would shortly be opened and a new scheme had been started for rural areas providing free treatment under practitioners with special qualifications There were [illegible] such special practitioners serving 74 areas in 11 different counties Special attention was also being given to the Merchant Service in ports The Ministry of Health took the view that the lower rate of incidence of VD in Sweden, where there was compulsory notification might not be the result of compulsion Sweden had a small population scattered mostly over rural areas with a highly developed sense of communal responsibility and of health consciousness The Ministry of Health was doubtful whether the Swedish experience would be repealed in our own country, Regulation 33B therefore left unchanged the voluntary basis of treatment The regulations had been carefully framed to secure equality of treatment for both men and women The whole question was surrounded by immense difficulties and there was a real need for a new and saner outlook in regard to it He would be afraid to trust himself to speak about the injury done by self-righteous Pharisees The psychology of both the sufferer and the community must be altered As Lord Dawson had said, VD was now responsive to treatment and the health authorities had had the whole-hearted cooperation of the medical profession

QUESTION TIME

Clean Milk Regulations

Mr R **Purbrick** asked the Minister of Health whether he would set out in detail the steps taken by his department in connexion with the production and distribution of cow's milk in a clean and healthy condition and state the various regulations made by his department for this purpose —Mr **Brown** replied The hygienic quality of milk is the subject of various provisions of the Food and Drugs Act, 1938, and of orders and regulations made under, or kept in operation by virtue of, the act These are mainly the Milk and Dairies Orders, 1926–38, and the Milk (Special Designations) Regulations, 1936–42 They are executed and enforced by local authorities The following are the principal relevant provisions —

Registration —No person may carry on the trade of cowkeeper or dairyman or use any farm or other premises as a dairy unless he and the premises are registered with the local authority A local authority may, in the case of persons applying to be registered or registered as retail purveyors of milk, refuse to register or cancel the registration if they are satisfied that the public health is, or is likely to be, endangered by any act or default of the person concerned A person aggrieved by any such decision may appeal to a court of summary jurisdiction

Conditions and methods of production —The Milk and Dairies Order 1926 contains a series of provisions with regard to cleanliness and methods of production, &c For example, certain requirements are laid down for the lighting ventilation and cleansing of cowsheds and buildings used for keeping milk, and for methods of milking Requirements are also laid down for cooling and for preventing the contamination of milk and for the cleansing of all churns, vessels or other utensils with which milk may be brought into contact

Conveyance distribution &c —Special provisions are laid down with regard to cleanliness and avoidence of contamination of milk in connexion with premises used for the sale of milk and in connexion with its conveyance and distribution

Infected milk —A supply of milk may be temporarily stopped if the medical officer of health has evidence that infectious disease has been caused by it or that the milk has been infected with such disease It is further an offence to sell for human consumption or use in the manufacture of products for sale for human consumption the milk of a cow which has given tuberculous milk or is suffering from certain specified animal diseases

Milk (Special Designations) Regulations —These regulations establish three grades of milk for which the special designations are tuberculin tested accredited and pasteurised It is unlawful to sell milk under these designations except in accordance with a licence Licences are granted in the case of producers by county and county borough councils Licences for dealers bottlers and pasteurising establishments are granted by borough, urban and rural district councils An appeal lies to the Minister against the refusal suspension or revocation of a licence by a local authority Tuberculin-tested milk is the milk of cows which pass a tuberculin test and a periodical clinical veterinary examination The milk must also comply with a prescribed test for cleanliness and keeping quality Accredited milk is the milk of cows which pass a periodical clinical veterinary examination and is subject to the same cleanliness test as is tuberculin tested milk Pasteurised milk is milk which is treated in accordance with one of two prescribed processes and it must also comply with a bacteriological test

Replying further to Mr **Purbrick**, Mr **Hudson** said that the administration of regulations as to the production of cow s milk in a clean, healthy condition was a matter for the Minister of Health but the Ministry of Agriculture was now administering a scheme under which milk should be tested at the point of first delivery as to its keeping quality The scheme was devised to ensure that sour milk should be kept off the liquid-milk market, and particularly that sour milk should not be bulked with clean milk and thus contaminate considerable quantities on the way to the consumer In the case of all samples of milk found by the test to be unfit for the liquid-milk market, notification was made to the county war agricultural executive committees so that the producers concerned could be visited and advised on how their method might be improved This scheme did not replace any existing legislation with regard to milk.

Shortage of Pasteurisation Workers

Mr **Arthur Hollins** asked the Minister of Labour whether his attention had been called to the report of the Committee on Tuberculosis in War time, in which attention was called to the serious depletion of skilled workers in the pasteurisation processing depots, and whether he was prepared to implement the proposals that specially skilled workers in these depots should be placed on the list of reserved occupations and that workers in this category who had already been called up should be returned to their posts —Mr **Ernest Bevin** replied My attention has been called to this report but I am not aware of any excessive depletion in the numbers of skilled workers engaged in milk pasteurisation. I consult the Minister of Food before calling up workers from this industry As regards release from the Forces, it would only be in cases of clearly proved necessity that I should feel able to recommend such action to the Secretary of State for War, in view of the requirements of man power for the Forces Dr **Russell Thomas** Does the Minister not think that the time has arrived to consult the Minister of Agriculture and the Minister of Food in order to secure the production of clean fresh milk instead of constantly subjecting milk to these artificial processes ? No further reply was given.

Extension of Clyde Valley Medical Service

Mr F W **Pethick-Lawrence** asked the Secretary of State for Scotland whether he had extended the area of the experiment in diagnosis and treatment of workers initiated in the

Clyde Valley, and if he would give the areas which the scheme now covered —Mr T JOHNSTON replied The supplementary medical service which has operated in the Clyde Valley since January last has now been extended to cover workers of all ages in the industrial areas of Scotland —Mr PETHICK-LAWRENCE Has the concurrence of the medical profession been obtained, and what is the approximate number of workers affected ? Mr JOHNSTON I have the entire concurrence of the medical practitioners I cannot give the precise number of workers covered by the extended operations of this act, but the first experiment covered 44% of the insured workers Dr E SUMMERSKILL Does this extension include dependants ? Mr JOHNSTON It deals only with workers, but it includes a housewife if she is a war worker

Mr H MCNEIL Is the Minister satisfied that there are sufficient beds to meet all kinds of cases referred for hospital treatment under this scheme ? Mr JOHNSTON Absolutely

Post-vaccinal Deaths in Scotland

Mr S P VIANT asked the Minister how many deaths had occurred during the recent smallpox outbreaks from vaccination and with vaccination as a contributory cause, respectively —Mr JOHNSTON replied According to the information at present available there have been 9 deaths in Scotland following vaccination during the recent outbreaks of smallpox, when about a million vaccinations were performed Seven of these were registered as due to encephalitis (2 in Glasgow, 3 in Edinburgh and 2 in Fife), 1 in Glasgow due to erythema and 1 in Lanarkshire due to toxæmia In addition there was 1 death in Glasgow due to measles, vaccination being stated to be a contributory cause

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Letters to the Editor

LABORATORY TECHNICIANS OF THE FUTURE

SIR,—It would be unfortunate if your annotation of Nov 28 (p 649) should give the impression that the Association of Scientific Workers (AScW) has completed the formulation of its policy to improve the status and education of technicians, or is committed to some of the proposals criticised in your article A memo on this subject is at present being considered by a joint subcommittee of the science education, medical sciences and technicians committees of the AScW When a final report has been prepared and approved it will be sent for criticism and suggestions as to appropriate action to other interested bodies, such as the Institute of Medical Laboratory Technology (when established), the Association of Clinical Pathologists, and so on Although the AScW hopes that improvement in the status and education of technicians can be inaugurated in the near future and is working towards that end, it should not be assumed that the statements mentioned in your annotation represent its considered policy

DOUGLAS MCCLEAN,
Chairman of Medical Sciences Committee

Association of Scientific Workers,
High Holborn, WC1

SIR,—Your annotation on laboratory technicians appears to me to discover difficulties where none need exist The supply and training of laboratory assistants have been solved at this hospital and the routine adopted may be of interest to other hospitals The laboratory is under the charge of a part-time pathologist and is run by a full-time technician who now has the diploma of the PBLAA When it was found necessary to expand the staff a lad of 16 of matriculation standard was engaged as an apprentice under a three-year agreement The hospital undertook to supply instruction and make him competent as a technician, paying him 10*s*, £1 and 30*s* a week for the three years, he on his part undertook to attend technical college evening school and to sit for the two parts of the diploma in three and five years At the end of three years he passed the first part and was given a further agreement at £2 a week, rising by two annual increments to £3 a week at the age of 21 An additional apprentice was engaged

Such a system supplies a continuous series of recruits at little cost and yet making the employment worth while, with its prospect of entering what is becoming a remunerative profession At the same time insistence on the seniors carrying out teaching quickens their interest and leads to better work It appears to me unnecessary to insist on training at only a few cent "offering considerable facilities for teaching" T PBLAA already has an effective routine for the dir tion of training, for examination and qualification its members

General Hospital, Halifax H I DEITCH

EASY CHILDBIRTH

SIR,—The review of Dr Dick Read's *Revelation Childbirth* in the *Lancet* of Nov 28 prompts me to p down my experiences during the birth of my first ba two months ago Up to the fourth month of m pregnancy I was terrified of labour, having seen what thought to be unbearable suffering while doing m midwifery cases (I am a final-year student) Then read Dr Dick Read's chapter on relaxation in F Browne's *Antenatal and Postnatal Care* (1942, p 7 His argument appeared reasonable, and from th moment I made up my mind to have a painless a normal labour

Labour started at 3 30 AM I noticed that the pa were merely uncomfortable while lying down whereas pa was very real when walking about, because then I w unable to relax properly When I got into bed at the hospi I read an ear, nose and throat book much to the amuseme of everybody Sister came to see how I was getting on eve hour or so I was having fairly frequent pains at the tim, but she thought I was telling stories At 2 PM the registrar arrived to have a look at me Sister was sure I was "not doing anything," or how could I be reading about otitis media ? I told him I had read the article on relaxation in Browne and was trying to act accordingly He smiled indulgently and later told Sister that in that case one did not really know how far on I was, but still he did not think much would happen for many hours At 3 PM the ward maid asked why I had come in if I was not in labour At 4 PM I was moved into the labour ward I had previously asked for the 'Minnitt' but after two attempts gave it up as unnecessary The end of the first stage was the only really uncomfortable time At 5 PM the HS told me I need not be brave and should scream as much as I liked, they would give me a whiff of chloroform when the head was being born He thought me mad when I refused because I wanted to hear the first cry During the end of the first stage and throughout the second stage I found two things extremely important first, though I knew what was happening and was not frightened, it was terrifying to be left alone in the room, secondly, it was important that there should be somebody's hand to hold while pushing The second stage lasted 50 minutes As long as I pushed as hard as I could during pains and relaxed completely between them it was not painful at all, only if I did not push hard for just a moment was it painful I certainly did not find the crowning of the head "a moment of extreme agony for the mother" The feeling of relief afterwards was indescribable

The staff, and particularly the midwives, were impressed by the fact that a normal labour of 15 hours duration could be so painless "Relaxation" was a topic of conversation in the hospital for the next few days A friend of mine who was having her first infant about the same time had similar experiences both as regards painlessness and the incredulity of the midwife

To sum up most doctors and midwives regard labour as necessarily very painful, but, judging from my own case, relaxation during the first stage and hard pushing during the second make labour almost painless except for the last few pains of the first stage Anæsthesia or even analgesia is not necessary in a normal labour It should be a rule that a woman in labour should never be left alone

ELENA ZADIK

MERCURIAL DIURETICS

SIR,—In your annotation of Nov. 28 (p 651) you point out that the number of recorded fatalities is astonishingly low considering the wide use of mercurial diuretics Among more than 5000 injections of mersalyl, 'Novurit,' 'Neptal' and 'Esidrone,' given or watched by myself, I remember only few untoward and no fatal reactions Of the two types of toxic reaction—that due to the mercury and that due to the diuresis—the latter is much rarer than the former When these drugs were first used there was much speculation about the risk of cardiac asthma and dehydrational shock from over urdening the left ventricle and sudden fluid mobilisa-ion, I have never seen such effects Dehydrational sychosis occasionally occurs, as does renal colic from shifting calculi The toxic effects are less uncommon and I would like to add to the four main causes mentioned in your article a fifth, possibly more common than any other—namely, the repetition of an injection after one or more have been given without diuretic effect The reasons of failure are various and immaterial to the outcome The cause of the intoxication is accumulation of the drug from retention in the absence of diuresis In desperate cases this complication cannot always be avoided, but its possibility should be borne in mind

Febrile reactions, even after correctly applied injections, may occur in cases of chronic infection, and the mercurials should as a rule not be given for tuberculous or carcinomatous effusion, or for polyserositis In a case of syphilitic aortitis under my care fever, with a rigor, followed each injection of novurit without any other untoward symptoms and an abundant diuresis resulted each time Prolonged treatment with mercurial diuretics may produce emaciation, probably from acidosis and dehydration, especially in non-cardiac cases Experience suggests that injections should not be given more often than every fourth day in chronic cases

Stratford on Avon Emergency Hospital MAX WINTERNITZ

INEFFECTIVE PESSARIES

SIR,—Within the last few weeks I have noticed an increase in the number of patients who have started an undesired pregnancy in spite of using quinine pessaries I am told that these are widely advertised, that " the Army " has complete confidence in them, and that " the Medical Officer " recommended them as reliable It is surely agreed among the profession that safety can only be assured by the use of both an occlusive pessary and a spermicidal paste or tablet together This knowledge should be used to prevent the distress and danger which is following the public's misplaced confidenc in medicated pessaries

Hove, Sussex LILIAS M JEFFRIES

Obituary

FRANK CECIL MAYALL BAMFORD

MB GLASG, SURGEON COMMANDER, RN

Surgeon Commander Bamford, who was killed in action during April, qualified at Glasgow University in 1926 The last war had found him as a youngster in Berlin, where he suffered the trials of internment On his return he matriculated at Glasgow and joined the University OTC, but the war ended before he was called for active service and he returned to his medical studies After holding a house-appointment at the Western Infirmary, Glasgow, in 1928 he entered the Royal Navy with which he had family associations His first appointment was to the Kai Tak aerodrome, Hong-Kong, and from there he was posted to HMS *Herald*, then on a survey commission off the Borneo coast In April, 1933, he was promoted to the rank of surgeon lieut-commander, and after a period in the naval dockyard at Chatham he served on the hospital ship *Maine* in the Eastern and Western Mediterranean until 1938 Promotion to surgeon commander came in the spring of 1939 and at the outbreak of war he was at the RN barracks at Chatham In June, 1940, he joined HMS *Dorsetshire* and saw service in Eastern waters as well as the rounding up of the German pocket battleship *Bismarck* Bamford had travelled a good deal in Europe, where he had many family ties He was an ideal companion and a friend who recalls several holidays spent wandering with him about the Continent writes " Under Bamford's somewhat shy and retiring disposition there lay a generous nature which showed itself in kindness and consideration to those around him, particularly to those less favoured by fortune He had a lively imagination, a profound sense of humour and a warm sympathy " His captain's words at the time of his death sum up his character Seldom have I met a man with more consideration for others and less for himself

In June, 1941 Bamford married Beatrice, younger daughter of the late Sir John Train, of Rutherglen Lanarkshire

RUSSELL JOHN HOWARD

CBE, MB LOND, FRCS

Mr Russell Howard, consulting surgeon to the London Hospital, who died at Oving, Bucks, on Dec 2, was one of those men that create the atmosphere of their hospital and represent it afterwards in the minds of their students Born in 1875 he was educated at King's College School and graduated MB with first-class honours from the London in 1899 Four years later he was awarded the gold medal when he became MS and in the same year he also obtained his FRCS His whole life was bound up with his hospital and the terse entry in the medical directory—surgeon, lecturer in surgery and house-surgeon to the London Hospital—proudly sums up his career When the time came for him to retire he felt that a vital part of him had been lost and it was with delight that he received the call to go back to teach for what were to be the last months of his life He had evolved a technique that effectively instructed the majority and his out patient clinic and ward round were attended by people of every race and colour, while his *Practice of Surgery*, first published in 1914, shows the simplicity and reasonableness of a great teacher

Wherever two or three from the London are gathered together the talk eventually turns to Russell John's forcible sayings and sound advice, and one of his flock writes A large frame, small hands and feet (of which he was pardonably vain), a pair of eyes alternately penetrating and merry, a crisp, cockney voice and a brilliant smile were some of Russell John's presenting characteristics Energy, vitality, humour, and an acute awareness of the things going on around him were others, he certainly didn't miss much Above all things, perhaps, he hated intellectual dishonesty, mental slovenliness, woolliness and indecision, hence the blackboard in his operating theatre on which first the dresser, then the house-surgeon and lastly " the master " himself (as some of us called him) had to chalk up a diagnosis of each case before operation Hence also the following dialogue, so often-repeated almost word for word either in OP's or at the bedside " What is wong (he couldn't roll his r s) with this patient ? " " Well, sir, it might be——" " I didn't ask you what it might be I want to know what it *is* " " I don't know, sir " " Of course you don't know But, Lordy me, you can have an opinion I used to be wrong ten times out of ten Now I'm only wrong seven times out of ten I'm improving and so will you if you stick to it ! " His " rags " at 9 o'clock on Saturday mornings —an unearthly hour for students, many of whom were living or digging an hour's journey from the hospital—were always packed to the roof with lambs only too keen to be verbally slaughtered in a merciless cross-examination, for they knew that the last quarter of an hour would be devoted to a succinct and masterly summary of the subject in hand His obiter dicta would make a book, and he had a genius for the reductio ad absurdum Thus, of the causes of acute intestinal obstruction " Let's start at the beginning—Imperforate anus ? H'm, rare I should say in a man aged 55 " Of nutrient enemata. " So you'd give him coffee per rectum, would you ? Would you put sugar and milk in it ? " Then turning to the patient, " D'you take sugar and milk ? " Of the occult blood test " If it's positive, all you know is that the patient is bleeding somewhere between his teeth and his anus, always provided that he hasn't got hold of a bit of meat and eaten it behind your back " Ex-house-surgeons and other privileged persons will recall exhausting week-ends, often after " full duty," of carpentry——but also the rewarding liqueurs—at his country house Most of all they will be grateful for the stark sense he taught them which has proved a sure basis of approach to every clinical problem that confronts them Of his loyalty and complete lack of jealousy it would be impertinent to speak

Notes and News

TOBACCO SMOKING AND NICOTINE

LENNOX M JOHNSTON, M B GLASG

ON the assumption that smoking tobacco is essentially a means of administering nicotine, just as smoking opium is a means of administering morphine, nicotine was given hypodermically to 35 volunteers in known doses with a view to comparing its effects, and particularly its psychic effects, with those of tobacco smoking, 7 received single doses but the others doses ranging in number from 2 to 35 Nicotine gr 1/50 given hypodermically to a non-smoker has a subtle psychic action difficult to describe "Swimminess," "muzziness," and "light-headedness" were the usual descriptions The action is specific and is readily distinguished from that of cocaine or codeine Whereas smokers almost invariably thought the sensation pleasant and, given an adequate dose, were disinclined for a smoke for some time thereafter, non-smokers usually termed it "queer" The sensation is usually perceived in about 5 min and lasts about 15 min There is some smarting at the site of injection and, a little later, pain may shoot proximally or distally along the limb Nicotine, gr 1/40, usually gives rise to toxic symptoms in a non-smoker, but gr 1/10 can be given to heavy inhalers or pipe smokers an hour after a smoke without toxic symptoms supervening A considerable tolerance to nicotine is therefore acquired as a result of smoking Toxic symptoms consist of excessive "swimminess" (unlike vertigo), rapid and forcible cardiac action, nausea, vomiting, and syncope

Although the percentage of nicotine in tobacco varies from 0 5% to 5%[1] it was found that as a rule the subjective sensation induced by one deep inhalation of cigarette smoke was closely simulated by the intravenous injection of gr 1/500–1/750 of nicotine This observation tended to confirm a previous one—namely, that the cumulative psychic effect of a cigarette inhaled (approximately 12 inhalations) closely resembled that of gr 1/50 of nicotine hypodermically Nicotine action is perceived in about 15 sec both on the inhalation of tobacco smoke and on intravenous injection of nicotine and may last for 1 or 2 minutes

In pure solution and well diluted, nicotine may be given orally In 5 oz of water gr 1/15 tastes of tobacco but is not particularly disagreeable, it induces an effective psychic action in about 15 minutes Stronger solutions tend to bite the throat Rough comparison suggests that when an average pipe or cigar is smoked fully gr 1/10 of nicotine is administered orally I gave myself 80 hypodermic doses of nicotine at the rate of 3 or 4 a day with some smoking, after this course I preferred a hypodermic injection of gr 1/50 of nicotine to inhaling a cigarette, and feelings of deprivation were experienced when the drug was discontinued Nicotine was given orally in doses of gr 1/15 three times a day to an old-standing case of neurosis, without the patient's knowledge She declared it was stronger and "steadied" her more than phenobarbital (gr 1) although it was less hypnotic She resented its withdrawal after some 80 doses

Cigarette inhalers perceive comparatively little of the "swimmy" sensation of nicotine, unless with the first few inhalations in the morning, and there is no doubt that much of the satisfaction of smoking lies in the appeasement of craving

DISCUSSION

It seems probable theoretically, that satisfaction is caused by the stimulation of sensory cells in the brain and that craving is the subjective manifestation of the depression which follows, for this depression the specific cure is further stimulation There is, however, a limit to the capacity of cells to respond to stimulation If therefore smoking is indulged in beyond this point there is no satisfaction It is clear, moreover, that the heavier the smoking the stronger the subsequent craving and the tendency therefore for heavier smoking to continue, which constitutes a vicious circle The strength of an addiction is measured by the difficulty in giving up a drug and it is difficult indeed for the inhaler or pipe smoker of many years standing to give up smo manently Strength of addiction is reinforced by formation and by mass suggestion from other Craving operates largely unconsciously and addicts usually unaware of their disturbance of judgment, many smokers will allege in all seriousness that t is due to damp, draughts dust, fumes, infection, "catarrh," or gas in the last war They will take manner of useless medicaments while rejecting and resenting the suggestion that smoking might be ible, that thought is so unwelcome that it is into the unconscious mind Even if this overcome it does not follow that appropriate action be taken Much oftener concern about the will be repressed, the symptoms now being a philosophically, while smoking continues It is therefore, that the statements of smokers on the of smoking on their health may legitimately be s Few addicts wish so strongly to give up their drug they are willing to overcome the inevitable feelings deprivation, but their health improves signally if drug is forcibly withheld Improvement in the particularly of cigarette inhalers, has been observed when they have given up smoking Some allege that their health has not improved, but the possibility that they are finding the struggle difficult, and unconsciously preparing an alibi for their eventual relapse, must be borne in mind Confirmed smokers who develop phthisis, peptic ulcer, bronchitis, or even tobacco amblyopia will rarely give up smoking except when their condition is grave, and even then usually only for short periods This non-cooperation in rational therapeutics arises from the craving for tobacco

SUMMARY

Nicotine was given hypodermically, in doses ranging from gr 1/50 to gr 1/10, to 35 volunteers, some being smokers and others non-smokers

Symptoms induced by the injections were described as "swimminess" or "muzziness"; large doses caused toxic symptoms in addition, including rapid and forcible cardiac action, vomiting and syncope Smokers could tolerate considerably larger doses than non-smokers

Intravenous injections of gr 1/500–1/700 induced sensations simulating those induced by inhalation of cigarette smoke Nicotine given orally—gr 1/15 in 5 oz of water—also had a psychic action

After a course of 80 injections of nicotine gr 1/50, an injection was preferred to a cigarette

Smokers show the same attitude to tobacco as addicts to their drug, and their judgment is therefore biased in giving an opinion of its effect on them, yet abstinence is generally followed by improved health

In conditions which would benefit by giving up smoking (phthisis, peptic ulcer, tobacco amblyopia) the confirmed smoker often will not abstain

CLYDESIDE SCHEME EXTENDED

THE Secretary of State for Scotland has announced that this scheme is being extended to cover all industrial workers north of the Tweed (see p 739) On Nov 27, a letter to insurance practitioners explained how diagnostic, consultant, hospital and convalescent facilities have now been opened to all insured workers in Scotland through the RMO service and the EMS Hospital Scheme They are no longer restricted to the young people of Clydeside Mr Johnston suggests a preference for workers with vague symptoms of fatigue or debility, and in mining areas for boys or young men who have recently entered the industry and show signs of unfavourable reaction to the work A report will be sent to his doctor after the patient's first examination and again on his discharge from hospital

BRITISH PROVIDENT ASSOCIATION

THE association has had a successful year and is able to offer an additional benefit to subscribers of three years' standing In future their benefit for hospital and nursing home service is to be raised from £5 a week to £7 7s Last year over £12,000 was distributed in benefits During the year subscribers were sent a questionnaire dealing with the position of provident schemes in the future medical services of the country and the executive council and the medical advisory board consider that their replies show that many peopl moderate means think the facilities for medical and tional treatment should be improved by the on of more accommodation at a reasonable charge by easing the financial burden of serious illness y subscribers also thought that the development of dent schemes providing free choice of doctor and tution should form an essential part of any improved ce

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[1] Extra Pharmacopœia, Martindale 1941 vol I, p 867

MILK IN HOLIDAYS

As the Christmas holidays parents of school-children faced with the problem of how to supply them with milk which was a substantial addition to the school t. At state-aided day schools milk may be consumed the children in holidays or at week-ends provided children meet in an approved place to drink it y cannot have it at home Under the B of E inistrative memo no 410 (10 viii 42) the same ilities were extended to private schools as were eady available for the others and sanction was given r the bourgeois to drink milk provided they went to e same place as the proletariat Milk is thus put on e same footing as beer except that there is no saloon lk bar The boy home from boarding-school should ng with him a temporary ration document, obtained the school from the food office which will entitle m to all rationed and controlled foods, including 3½ ints of milk a week In theory he can obtain additional milk by presenting himself twice daily at the place pointed for elementary-school children, which will ually be the elementary school itself In practice the boarding-school boy will not get his "milk in schools" during the holidays Probably the difficulty of switching distribution from the school centre to the individual consumer would be insurmountable But another time it might be well to authorise the issue of an extra tin of dried milk to be brought home by the child from school

NUTRITION OF SANATORIUM PATIENTS

THE Minister of Health regrets that the "limitation of supplies and the necessities of others" do not allow an extra ration of eggs for the tuberculous (*Lancet* Dec 12, p 714) They do however get an extra allowance of milk Dr Lissant Cox, central tuberculosis officer for Lancashire, has made detailed investigations at two of the county sanatoriums into the gain or loss of weight of patients In the first six months of 1939 discharged patients had gained on an average 10 6 lb During 1941 the average gain was 5 2 lb, and for the first six months of 1942 5 3 lb So although their gain is less than before the war sanatorium patients are increasing their weight at a time when the rest of the population is, sometimes with advantage, losing weight The medical supts of the Lancs institutions, according to Dr Cox's interim report for 1941, consider that their patients are not suffering in health from rationing and that there is no evidence to justify asking Lord Woolton for a little extra for them

ALTERNATIVE KEY TO THE NEW AGE?

SOCIAL Credit failed in Alberta, where it was tried Mr C Marshall Hattersley in a pamphlet (*Now—or Never?* Swinton, Yorks SCCC 6*d*) proposing its immediate application here and suggesting possible postwar developments, states its principles Price-fixing, subsidy, purchase tax and rationing, he points out, are accepted in war-time, must they be thrown overboard when peace returns, and will slumps poverty unemployment and a new war complete the cycle? The Social Credit answer to the dilemma is set out here, though not very clearly It is also referred to by Dr A T Westlake (*The Social Credit National Health Service* London the Social Credit Party 3*d*) who defines the party's principle as "costless credit creation and cancellation on the basis of production and consumption recorded by national accountancy" The results, however, are to be a perfecting of national health achieved through going on much the same as usual only better Thus the general practitioner will be "a man of wide culture and possessed of imagination, sympathy and intuition, and a fertile philosophy of life", and he will live partly by a National Dividend in the form of free rations of food, clothing, fuel, shelter and petrol, and partly by credit vouchers for goods, and a graded salary The voluntary hospitals will be left to govern themselves as usual but their financial worries would be at an end it would all be done through a central health department, yet the administration would be decentralised, new schemes would be financed and new hospitals built by a process of crediting and cancelling sums in the books of the National Accounts Department It gives the impression of a brilliantly lighted scene without the least vestige of shadow

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University of Cambridge

On Dec 5 the following degrees were conferred

MD—L J Bacon and R A Jones
MB BChir—T P Pattinson (by proxy)

University of London

Mr G A R Kon, D Sc, has been appointed as the first occupant of the university chair of chemistry at the Royal Cancer Hospital (Free), which was instituted just before the outbreak of war Dr Kon has been a member of the staff of the Imperial College of Science and Technology since 1925 and the title of reader in organic chemistry was conferred on him by the senate in 1935

Royal College of Surgeons of England

At a meeting of the council of the college held on Dec 10, with Sir Alfred Webb Johnson, the president, in the chair, diplomas of fellowship were granted to the following

R A Plachaud LM & S Ceylon, N F Kirkman, MD Manc, S C Mehta, LRCP Robert Roaf, BM Oxfd, J P Bentley MB Lond, B N Brooke, MB Camb, Walter Thompson MB Leeds D K Sambrook MB Lond, J P Childs BM Oxfd, H A Haxton, MB St And, and D K Lennox, MB Glasg

A diploma of membership was granted to G H V Clarke, and diplomas in anæsthetics were granted jointly with the Royal College of Physicians to the following

E H Ainslie Evelyn J Atkins, L B Bourne Albert Christie P J De Vescovi James Elliott G A Hart J A G Horton, Brenda G Hutchinson, I R Jones H G Kahlenberg Isabelle G Little Florence M McClelland Margaret McClelland T F Miles, Dorothy S Price, F N Price Shila G Ransom Alice C Rose, J B Scarr, Thomas Sim A D H Simpson Dorothy Spence Sales R J Stout C G Townsend, J T Worsfold and Jean R Young

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty held on Dec 7 with Mr James H MacDonald, the president, in the chair, the following were admitted to the Fellowship

John Black, MB, Glasgow; Charles Borg, MD Richmond G G Browning MB Glasgow A J V Cameron MB, Clydebank G M Currie MB Kilmarnock Aloysius Dunn, MB, Glasgow and H B Young MB Glasgow

American Ophthalmological Congress

The second meeting of the Pan American Congress of Ophthalmology will meet in Montevideo, Uruguay, from Nov 4 to 7, 1943 The executive secretaries are Dr Conrad Berens, 477, First Avenue, New York, and Dr M E Alvaro, Consolacao 1151, Sao Paulo, Brazil

Czechoslovakian Unit in London

At the request of the Czechoslovak government 60 beds at Hammersmith Hospital were opened on Dec 1 for the use of Czechoslovakian Service and civilian patients

Edinburgh Child Health Centre Opened

On Nov 30 new premises for the Edward Clark chair of child life and health at Edinburgh University were formally opened by the Secretary of State for Scotland Sir Thomas Holland, vice chancellor, who presided, gave an account of the foundation of the chair and the pioneer work of Dr John Thomson, he thanked the directors of the Royal Edinburgh Hospital for Sick Children for the facilities for study and teaching that had been and were being provided Prof Charles McNeil recounted the development of the health side of the chair, the aim, he said, was to set up a department of child health, based upon the clinical material in the new-born nurseries of the maternity pavilion of the Royal Infirmary and of the infants returning to the welfare clinic in the pavilion Their immediate problem was that of infant and neonatal mortality The new premises would be a training-school for doctors and nurses concerned in the care of children, and a centre of study and investigation of all problems bearing on child health The new department was already linked with the obstetrical staff of the pavilion It now desired cooperation with the child welfare and school medical services of Edinburgh Corporation, and with the general practitioners of the city Lord Provost Darling said the corporation fully appreciated the importance of child life and would be glad to coöperate with the university in the promotion of child health Mr Johnston, declaring the centre open, said the high infant death rate in Scotland was lamentable and a matter of grave national concern he had appointed a committee to investigate its causes and to suggest remedies, and the Department of Health would be glad to give assistance to the joint contribution of city and university to the national problem

Medical Supply of Radon

Radon having largely replaced radium element as a therapeutic agent under war conditions, the National Radium Commission and the Medical Research Council have made themselves jointly responsible for its production at convenient centres Since radon treatment carries with it the same risks as radium treatment, radon will now be supplied only to hospitals which have been approved by the Radium Commission It will not be supplied direct to individual clinicians Approval postulates a properly equipped radiotherapeutic department, with a radiotherapist and a physicist as part of the staff, and an organised follow-up of patients treated by radiotherapy

An Anti-Tuberculosis League for Ireland

On Nov 19 a meeting of the medical and veterinary professions was held at the Royal College of Physicians of Ireland under the chairmanship of Dr R J Rowlette, PRCPI, to discuss the establishment of a national anti-tuberculosis league The large attendance included representatives from Northern Ireland, headed by the chief tuberculosis officer for Belfast, and the proposal to form the league was unanimously approved It was decided to summon a meeting open to the public as well as members of the two professions early in the new year, when the league will be formally inaugurated and officers and committees appointed The new league hopes to educate the public in tuberculosis matters, stimulate research, collect trustworthy statistics, and press for adequate hospital and sanatorium accommodation

London Fog

During the fog of Nov 11–12, between 6 PM and midnight, 96 accident calls and 21 general calls—three times the usual number—were dealt with by the London ambulance service Auxiliary ambulances, normally reserved for air raid casualties, were brought into use and many of the crews acted as guides One ambulance, for instance, progressed along a main thoroughfare convoyed by nine men and women with torches—a trip of 1¾ miles which took 1 hr 40 min Besides accident casualties, maternity patients, midwives, infectious patients, and stranded wayfarers, were fed, tended, cheered, and where possible helped on their way

LCC Pathological Demonstration

On Dec 2 the London County Council Pathological Service gave a series of lectures and demonstrations at the Group Laboratory, Lambeth Hospital, to pathologists and consultants of the Royal Canadian Army Medical Corps and the United States Army Medical Corps, 16 Canadians and 9 Americans were present They included Colonel J A Macfarlane, consulting surgeon, and Colonel L C Montgomery, consulting physician, and Lieut-Colonel M H Brown, assistant director of hygiene, Canadian Forces With the American pathologists was Major Ralph Muckenfuss now in charge of the US General Medical Laboratory "A" The visitors were welcomed by Dr Andrew Topping, deputy medical officer of health, and in the morning a series of short papers were read by Major J E McCartney, Dr Robert Cruickshank, Dr W W Kay and Dr R F L Hewlett The work of the council's hospital service, with 35,000 beds for acute and chronic sick and 30,000 beds for mental diseases, and of the council's pathological service was explained The latter comprises 28 pathologists and assistant pathologists, 105 laboratory technicians, and 72 others (clerical, domestic, drivers and stablemen) The pathological staff for the mental hospitals is not included in these figures

At lunch the visitors were joined by Mr E C H Salmon, clerk of the LCC, and Dr W Allen Daley, the MOH, both of whom addressed the gathering In the afternoon the council pathologists and their staffs gave a series of demonstrations showing the work of the LCC pathological service, including culture media, leptospiral and salmonella infections, liver-function tests, blast and crush injuries, malignant cells in sputum, sternal puncture, estimation of sulphonamides, neisseria and hæmophilus infections, typing of streptococci, diagnosis of intestinal infections and use of desoxycholate medium. diphtheria diagnosis and antistreptolysin titration

Infectious Disease in England and Wales

WEEK ENDED DEC 5

Notifications—The following cases of infectious were notified during the week smallpox, 0, fever, 2900, whooping-cough, 1195, diphtheria, 1011 paratyphoid, 5, typhoid, 4, measles (excluding ella), 11,205, pneumonia (primary or influenzal), 890 puerperal pyrexia, 145, cerebrospinal fever, 73, myelitis, 11, polio-encephalitis, 0, encephalitis argica, 3, dysentery, 191 ophthalmia ne 73 No case of cholera, plague or typhus fever notified during the week

Deaths—In 126 great towns there were 2 (0) from enteric fevers, 3 (0) from scarlet fever, 15 (1) from measles 8 (0) from whooping-cough, 22 (2) from diphtheria, 58 (8) from diarrhœa and enteritis under years, and 33 (6) from influenza The figures in parentheses are those for London itself

Birmingham reported 6 deaths from diarrhœa, Manchester no other great town more than 3

The number of stillbirths notified during the week was 221 (corresponding to a rate of 33 per thousand total births), including 21 in London

By Dec 11 the total number of deaths from smallpo reported from Edinburgh was 6

For some months past there have been many cases poliomyelitis in various districts of Ireland, but recen reports give hope that the epidemic is dying out Th disease had the highest incidence in some of the wester counties, notably Clare and Roscommon, but it was no limited to any area From July 1 to Nov 7, 137 case were reported (37 in the city of Dublin with 34 deaths For the four weeks prior to Nov 7 the numbers reporte were 28, 17, 18 and 22 In the week ended Nov 2 only 5 cases were reported

The fact that goods made of raw materials in shor supply owing to war conditions are advertised in thi paper should not be taken as an indication that they a necessarily available for export

Appointments

CROOKS, FREDERICK, MCH BELF, FRCSE medical referee for th county court districts of Newark and Nottingham (circuit 18)

THOMAS, E W, MB GLASG, FRCSE, FRFP & S RSO at the municipa general hospital, Burnley

WARD MARY E E, MB LOND psychiatrist to Berks child guidanc clinics

Births, Marriages and Deaths

BIRTHS

HOPKYNS—On Nov 30, at Colchester, the wife of Surgeon Lieu tenant J C W Hopkyns RNVR—a son

MALLINSON—On Dec 8, at Sittingbourne, the wife of Dr F M Mallinson—a son

MATHISON—On Dec 11, at Darwen, the wife of Surgeon Lieutenan Alex Mathison, RNVR—a daughter

MILLING—On Nov 20, at Woking, the wife of Dr P F Milling— son

PATRICK—On Dec 3, at Amesbury, the wife of Captain H L Patrick RAMC—a daughter

PENROSE—On Dec 4, at Banbury, the wife of Dr T H Penrose—a son

SCADDING—On Nov 30, in London, the wife of Lieutenant F H Scadding RAMC—a daughter

VAILE—On Dec 5, at Addlestone, the wife of Dr John Vaile of Chertsey—twin sons

WOLSTENHOLME—On Dec 8, at Whitby the wife of Major G E W Wolstenholme, RAMC—a daughter

MARRIAGES

LANDELLS—NEVILLE SMITH On Dec 3, John Wingrave Landells B CHIR, captain RAMC, to Norah Neville Smith

RANKIN—WAINWRIGHT—On Dec 8, at Wembley, Alan Clement Raleigh Rankin, MB, major RAMC, to Joan Wainwright

THOMPSON—HULL—On Dec 10, in London, Vernon C Thompson FRCS, to Jean Frances Hull

DEATHS

CRAWFORD—On Dec 9, at Mount Park Road, Ealing, Dirom Grey Crawford MB EDIN lieut colonel IMS retd, aged 85

CUFFE—On Dec 4, Alexander Cuffe, MD DURH, FRCSI, of Vange, Essex aged 79

MINCH—On Nov 8, in India, John Berchmans Minch, MB NUI lieut colonel RAMC

MITCHELL—On Dec 10, Charles Robert Paterson Mitchell, MD EDIN, MOH of Malvern

RITCHIE—On Dec 6 in London, Alexander Lumsden Ritchie, MB ABERD of Cavendish Suffolk

SWEETNAM—On Dec 6, Stephen Westrope Sweetnam, MRCS, major RAMC, aged 73

TETANUS IN THE MIDDLE EAST
EFFECTS OF ACTIVE IMMUNISATION

J S K BOYD
O B E, M B GLASG, D P H
COLONEL RAMC, DEPUTY DIRECTOR OF PATHOLOGY

J D MACLENNAN
M D ABERD
MAJOR RAMC, DEPUTY ASSISTANT DIRECTOR OF PATHOLOGY

Middle East Force

THIS report records the incidence of tetanus during the first 2 years of war in the Middle East, and attempts to assess the part played by active and passive immunisation in the prevention of this disease. Passive immunisation was fully tested in the war of 1914–18, and proved its worth by reducing the incidence of tetanus to under 1 case per 1000 wounded, but the present war is the first occasion on which active immunisation has been submitted to a practical trial.

PRINCIPLES IN TETANUS PREVENTION

Tetanus results from the action of the toxin of *Clostridium tetani* on the motor nerve-cells of the central nervous system. The organism is an anaerobic saprophyte found in the contents of the large intestine of some animals and in soil with which excrement from these is mixed. It forms highly resistant spores. In wounds with dead tissue or blood-clot in their depths, in areas of necrosis produced by foreign bodies, and in regions devitalised by an impoverished blood-supply, implanted spores germinate and multiply. Toxin produced by the vegetative forms finds its way into the body of the host and exercises its specific action on the motor nerve-cells. Since the bacillus lives in dead and not in living tissue, it is not directly subject to the action of the normal phagocytic processes.

Development of tetanus may be avoided by two distinct but complementary measures.

Surgical Treatment.—The potential focus of infection must be extirpated by removal of all dead tissue, blood-clot and foreign bodies from the wound. This helps to prevent gas gangrene as well as tetanus; but surgery alone will not prevent tetanus in every case.

Immunisation.—Any toxin formed before surgery can be carried out, or emanating from small infected pockets or inaccessible portions of dead tissue, must be neutralised by active and passive immunisation.

Active immunity is produced by inoculation with tetanus toxoid, formolised toxoid being used in the British Army. Two injections of 1 c cm. are given at an interval of 6 weeks and a third 6 months or more later. After the first inoculation no antitoxin appears in the circulation but sensitisation, believed to be of the reticulo-endothelial system, develops over about 6 weeks. When the second inoculation is given after this interval, the toxoid stimulates the sensitised reticulo-endothelial system and produces an outpouring of antitoxin into the circulation. In most subjects this reaches a level ranging from 0.1 to 1 unit per c.cm. of serum after an interval of 10–12 days, and thereafter slowly declines. The sensitivity of the reticulo-endothelial system is maintained and apparently enhanced after the second inoculation, so that the third, given 6 months later, is followed by an antitoxin titre which normally rises to from 2 to 10 units per c cm. of serum, and may reach an even higher level.

In an actively immunised subject suffering from a tetanus infected wound the toxin may be regarded as neutralised in two phases. In the early stages the circulating antitoxin inactivates the first quantities of toxin coming from the wound. Meantime the " shadow-factory " in the reticulo-endothelial system is stimulated, and in due course quantities of antitoxin are released into the circulation, ready to reinforce the action of what pre-existing antitoxin remains.

The interval between stimulation of the reticulo-endothelial system and the production of antitoxin has thus an important bearing on the problem of active immunisation. In 1938 an experiment to determine this point was carried out and gave the figures shown in table I. The 5 subjects were some of the RAMC personnel on whom the original experiments in immunisation at the Royal Army Medical College were made[1]; they had been inoculated with varying doses of different preparations.

TABLE I—PRODUCTION OF TETANUS ANTITOXIN IN PREVIOUSLY IMMUNISED SUBJECTS, AFTER A DOSE OF 1 C CM OF TETANUS TOXOID

Recorded in USA units of antitoxin per c cm. of serum

—	Date in 1938	Subjects				
		A	B	C	D	E
Initial antitoxin titre	Sept 9	0.23	0.0065	0.0125	0.05	0.5
Tetanus toxoid 1 c cm. given on Sept 12, subsequent antitoxin titre	13 (1)	0.23	0.0065	0.0125	0.05	0.5
	14 (2)	0.23	0.0065	0.0125	0.05	0.5
	" 15 (3)	0.25	0.010	0.0125	0.055	0.5
	17 (5)	0.85	0.035	0.07	0.55	0.55
	19 (7)	11.00	0.80	2.00	3.50	1.65
	22 (10)	16.00	2.00	3.50	4.50	3.09
	" 26 (14)	16.50	2.00	3.30	4.20	2.70
	Oct 11 (30)	14.00	1.60	3.00	4.00	1.89

Figures in parentheses = number of days after inoculation

It will be noted that antitoxin production begins about the 5th day, and reaches its peak somewhere between the 10th and 14th days. From these data, it has been concluded that in general active immunisation may be expected to afford protection against tetanus in all wounded men who receive adequate surgical treatment. There are, however, possibilities for which provision must be made:

1. The subject may not react to inoculation with toxoid. There is little direct evidence of this, but judging from other processes of immunisation occasional non-reactors are to be expected.

2. Although a subject is immunised, his circulating antitoxin may be small in quantity. There is thus a period of about a week when the barrier of protection is low, and liable to break down.

3. Antitoxin production may be less active in a badly wounded and shocked subject than it is in a normal healthy person.

Passive immunisation consists in introducing into the body a known quantity of preformed antitoxin. This neutralises toxin with which it comes in contact, and consequently becomes exhausted in proportion to the amount of toxin present. If not used up in this way it is slowly destroyed or excreted, so that the quantity remaining a fortnight after inoculation is too small to be of practical value. Repeated inoculations at weekly intervals are necessary to maintain a satisfactory antitoxin level. Antitoxin has no antibacterial properties, and acts solely by rendering toxin innocuous.

ROUTINE PROPHYLAXIS

The following procedures, based on these principles, are now adopted as a routine in the Army.

Each man shortly after enlistment is inoculated with two doses of 1 c cm. of tetanus toxoid at an interval of 6 weeks. After a further interval of at least 6 months a third dose of 1 c cm. is given. Inoculation is on a voluntary basis, but as tetanus toxoid causes little or no reaction (except very rare anaphylactic reactions) it is seldom refused. The percentage inoculated with two doses is over 95% in most units, but up to date a much smaller percentage has received the more recently introduced third dose.

As soon as possible after an injury is inflicted, each wounded man is given a dose of 3000 international units of tetanus antitoxin (ATS). This is intended to cover any gaps in the protection afforded by active immunisation. Unfortunately in the rush of battle conditions this inoculation is occasionally omitted. Should the patient never have been actively immunised, he is given further doses of ATS at weekly intervals.

EXPOSURE TO INFECTION

Little is to be gleaned about the incidence of tetanus from the medical experiences of the BEF in France during 1939–40. There were few casualties until the end of that campaign, and it must be assumed that many of the more severely wounded, about whom nothing is known, were left behind. Bensted[2] gives such information as is available. It was estimated that about 90% of the BEF were inoculated with two doses of tetanus toxoid. In all, 8 cases of tetanus were reported among the unprotected 10% No tetanus developed in the 90% who were actively immunised

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[1] Boyd J S K *J R Army med Cps* 1938 70, 289

[2] Bensted H J *J R Inst pub Hlth Hyg* 1941 4 7

In the Middle East it has been possible to obtain records of most of the cases arising, and to study the relationship of the incidence to active and passive immunisation The chances of acquiring tetanus in the Middle East are not comparable to those in France and Flanders The sandy and arid soil of the desert is unsuited for the propagation of anaerobes, though quantities of the desiccated droppings of donkeys, ponies and camels are to be found scattered on the sand near the main tracks An attempt has been made by the examination of samples of soil, and by making cultures from wounds other than those in cases in which tetanus develops, to assess the risk of acquiring tetanus infection in the Middle East

TABLE II—SOIL SAMPLES FROM WHICH TETANUS BACILLI WERE CULTURED

—	Locality	Serological type
1	Dust blown in by sand storm, near Daba	III
2	Agricultural land, Barrani	V
3	Italian Camp 4 km west of Barrani	III
4	Tobruk-Benghazi road, 129 km west of Tobruk	VII
5	Appolonia	II
6	Cultivated land, 10 km west of Barce	I
7	*Barce, hospital* grounds	V
8	Benghazi, roadside	V

Soil samples taken from 91 different spots between Daba and Benghazi (including the Quattara Depression) have been examined for tetanus spores, with positive results in 8 cases (8 8%) In the samples taken between Daba and Tobruk, where the country is mainly desert, tetanus was found only 3 times in 60 samples In the 31 samples taken from the more fertile land west of Tobruk, it was found in 5 Table II shows the locations from which the positive samples were taken, and the serological type of organism recovered All these strains of *Cl tetani* isolated from soil proved to be toxigenic

Despite the relative rarity of tetanus bacilli in soil samples, they are by no means uncommon in wounds A series of 214 wound cultures received from different hospitals has been examined for terminal-spored anaerobes These cultures were taken from wounds of a severe type in which anaerobes were either known or suspected to be present, so that the series is a selected and not a representative one In 63 of these cases gas gangrene was present or supervened An analysis of the terminal-spored anaerobes found in these wounds is given in table III It will be seen that *Cl tetani* was found in 18 (8 4%)

In one hospital, from January, 1941, to July, 1942, wound swabs from a total of 494 cases were examined One or more species of clostridium were found in 66, including 20 terminal-spored anaerobes Of these, 2 were *Cl tetani* (one type III, one type V) The commonness of terminal-spored bacilli in wounds is worthy of note The laboratory often receives from the ward a swab accompanied by a request for an immediate report on the presence of *Cl tetani*, and the surgeon is apt to be aggrieved when told that it will be some days before a definite reply can be given Table III makes the reason obvious it is not possible to give an opinion of any value on morphological appearances alone The laboratory can afford no timely positive assistance in the diagnosis of tetanus, although it may ultimately provide confirmatory evidence Early diagnosis must be based on clinical signs and symptoms

In the period under review, 18 cases of clinical tetanus have been reported in the MEF These include 1 case which was notified from Malta, but it is not known if any other cases have developed there The principal data relating to incidence, prophylaxis, antitoxin therapy, and progress are shown in table IV

United Kingdom, Australian, New Zealand, and Indian troops have been inoculated with tetanus toxoid, but this measure was not adopted for South African troops until comparatively recently German troops were not immunised in the early stages of the campaign when these cases developed, and it is not known whether their practice has since changed Italian troops may or may not have been immunised Captured Italian medical stores included large quantities of a typhoid-paratyphoid vaccine in which tetanus toxoid, later proved to be potent, was embodied, on the other hand the inoculation state of Italian troops was found to be low

In the British and Dominion Forces receiving routine inoculation a consecutive series of casualties included 4 cases of tetanus (2 in Maoris and 2 in Indians, 1 of whom had not been inoculated), and the incidence of the disease was 0 13 per 1000 wounded Among the South Africans during the same period the incidence was 1 6 per 1000 wounded There were 3 cases among an unknown but relatively small number of wounded Germans, 3 in Italians whose inoculation history is uncertain, and 1 in an Eritrean Thus whereas the incidence of tetanus among the actively immunised troops was almost negligible, the number of cases reported in unprotected South African, German and Italian wounded was relatively high Though the total number of cases is small the evidence in favour of active immunisation appears to be fairly definite

TETANUS IN IMMUNISED SUBJECTS

Of the 18 cases of tetanus reported, 5 were in men who had been actively immunised, 4 with two doses, and 1 with three doses One case, in which only a single dose had been given, is included in the non-immunised series. None of these 5 cases received the stipulated dose of 3000 units of ATS as a prophylactic measure after being wounded Of these 5, 2—one a Maori, the other an Indian—recovered

CASE 5 —This Maori received tetanus toxoid on March 11 and April 3, 1940 Wounded in Crete, May 21, 1941 Bullet through left forearm No injury of bone No ATS administered Trismus and neck-rigidity appeared on June 3, 13 days after wounding Not seriously ill No generalised spasms Given 40,000 units ATS intramuscularly and the same intrathecally on June 3 Same dosage repeated on June 4 Gradually improved and recovered *Cl tetani*, type VII, recovered from wound *Chemotherapy* no record

CASE 15 —Indian Only hearsay evidence of this case Said to have developed tetanus after a gunshot wound, and to have recovered Was not reported as tetanus, and when information came to light no further details could be given.

TABLE III—TERMINAL SPORED ANAEROBES FOUND IN CULTURES FROM 214 WAR WOUNDS IN CASES WHICH DID NOT DEVELOP CLINICAL TETANUS

—	A	B	—	A	B
Cl tetani type I	2	1	*Cl cochlearium*	6	3
,, ,, ,, III	3	1	*Cl hastiforme*	2	1
,, ,, ,, IV	1		*Cl capitovale*	4	2
,, ,, ,, V	3	2	*Cl tertium*	20	13
,, ,, ,, VI	1		*Cl sphenoides*	3	2
,, ,, ,, VII	1	3	*Cl tetanomorphum*		1
Cl putrificum	9	8	Unidentified	1	

A=gas gangrene (63 cases) 52 strains of terminal spored anaerobes were isolated

B=wounds not complicated by gas gangrene (151 cases) 65 contained anaerobic bacilli, 37 were terminal spored anaerobes

Of the 5 actively immunised cases 3 were fatal Case 7, the first of these, has been reported in detail by Major R J McGill, the following is an extract of his notes

CASE 7 —Indian Tetanus toxoid, April 25 and June 7, 1941 Not a battle casualty No prophylactic antitoxin administered About Oct 21, while stationed on the Red Sea littoral, cut his hand Dec 2, stiffness of dorsal thoracic muscles and back of neck, 42 days after wounding Dec 4, admitted to hospital Had completely healed wound on left thenar eminence and one on palmar surface of left middle finger, each about $\frac{3}{4}$ in long Moderate risus sardonicus and trismus, the jaws opening $\frac{1}{2}$ in Much stiffness of the back and neck Abdominal muscles rigid, but moved with respiration Paroxysms of opisthotonus regularly every ½ min, lasting about 5 sec, accompanied by clenching of the jaws and spasm of the thoracic and abdominal muscles Limbs unaffected Dec 5, spasms only once a minute Dec 6, spasms every 2 min, much less severe Dec 7, died suddenly

Treatment about 30,000 units ATS before admission to hospital and 80,000 units daily while in hospital

TABLE IV—FINDINGS IN 18 CASES OF TETANUS IN THE MEF

ase	Locality	Nationality	If actively immunised	Date of wounding	Prophylactic ATS	Date of onset of tetanus	Incubation period (days)	Dosage of therapeutic ATS (IU)	Result	Duration of symptoms in fatal cases (days)	Type of organism isolated
1	Western Desert	Ital pw	?	?	?	Jan 13, 1941	?	50,000	D Jan 13, 1941	5–24	V
2	,,	Ital pw	?	Jan 3, 1941	?	Jan 15	12	117,000	R		III
3	,,	Ital pw	?		?				D	?	I
4	Eritrea	Eritrean pw	?	?	?	?	3	Given dose unknown	R		No culture
5	Crete	NZ (Maori)	2 doses	May 21	Nil	June 3	13	160,000	R		VII
6	Western Desert	German pw	Nil	June 16	June 16, 1941	July 9	23	90,000	D Sept 9	88	V
7	Red Sea * littoral	Indian	2 doses	Oct 21	Nil	Dec 2	42	307,000	D Dec 7	6	No culture
8	Western Desert	South Afr	Nil	Nov 23	Nil	Dec 8	15	400,000	R		V
9	,,	German pw	Nil	Nov 24	Nov 26	Dec 10	16	50,000	D Dec 11	2	No culture
10	,,	German pw	Nil	Nov 29	Nil	Dec 16	17	60,000	D Dec 20	4	V
11	,,	Indian	Nil	Dec 6	Nil	Dec 18	12	117,000	R		No culture
12	,,	South Afr	Nil	Dec 12	Dec 19	Dec 21	8	240,000	D Dec 23	3	No culture
13	,,	South Afr	Nil	Nov 27	Nil	Dec 24	27	260,000	R		VII
14	,,	South Afr	Nil	Jan 18, 1942	Nil	Feb 14 1942	27	600,000	R		No culture
15	,,	Indian	2 doses		?				R		No culture
16	,,	South Afr	1 dose Mar 11, 1942	June 28	Nil	July 6	8	522,000	R		New type toxigenic
17	Malta	UK	2 doses	June 23	Nil	June 28	5	320,000	D June 29, 1942	1	No culture
18	Western Desert	NZ (Maori)	3 doses	July 14	Nil	July 22	9	150,000	D July 24	1	III

* Not a battle casualty D = death R = recovery pw = prisoner of war

Autopsy left heart comparatively empty, right heart engorged, rupture of one pulmonary cusp, passive congestion of viscera No culture obtained *Chemotherapy* none

This case presents several peculiar features (*a*) The only lesions to which the infection could be attributed were two small, superficial, and completely healed wounds of the hand Unfortunately no cultures or sections were made (*b*) The interval between wounding and the onset of symptoms was 6 weeks, and he died in 5 days (*c*) The symptoms were unusual short spasms lasting about 5 sec at regular intervals of ½ min to begin with, later of about 2 min (*d*) While the tetanic condition was improving, death resulted apparently from the rupture of a pulmonary cusp, a most exceptional and inexplicable event

The possibility of some alternative diagnosis has been carefully considered Rabies can be excluded by the symptomatology and the remaining condition to be considered seems to be some form of poisoning Prof J A. Gunn considers that in spite of the atypical features, tetanus remains the most probable diagnosis in this case Accepting it as one of true tetanus, and the wounds described as the seat of infection, then the focus from which the toxin was evolved was a small one (compare cases 17 and 18) and, as the wounds were healed, the interval between the elaboration of the toxin and the appearance of symptoms must have been considerable According to the patient's documents, he was inoculated with two doses of tetanus toxoid some 6 months before the onset of his illness Had this inoculation resulted in sensitisation of the reticulo-endothelial system, the stimulus afforded by the tetanus toxin elaborated in the wound would, in normal conditions, have led to the production of antitoxin from the 5th day onwards, which, by the time symptoms developed, would have reached a high level (see table I) In cases where toxin production is massive (cases 17 and 18) it is easy to conceive that antitoxin production may be inadequate to neutralise it but in this case there is nothing to suggest excessive toxin formation If inoculation was carried out as recorded—and there is no reason to doubt it—it seems reasonable to conclude that this is one of the rare instances in which the subject has *not* responded to immunisation

CASE 17—A gunner at Malta Tetanus toxoid 1 c cm. Aug 23 and Oct 8, 1940 On June 23, 1942, large wound soft tissues of heel plus comminuted fracture both bones of leg at junction of lower and middle thirds Wounds excised, sutured, put up in plaster No ATS given June 28, 5 days after wounding difficulty in swallowing, trismus, later, neck rigidity *June 29*, stiffness and retraction more pronounced Plaster removed soft tissues necrotic, foul pus in wound, and at site of fracture amputation through fracture Developed respiratory spasm, condition rapidly deteriorated, died

Treatment with ATS June 28, 80,000 units intramuscularly, in two doses June 29, 40,000 units intramuscularly, 200,000 units intravenously *Chemotherapy* no record No culture taken

CASE 18—New Zealander, Maori Tetanus toxoid Jan 12 and Feb 26, 1941, and April 13, 1942 July 14, reported sick, with temperature Later wounded by shrapnel in left arm No ATS given Evacuated via casualty-clearing station to a general hospital Temperature at one stage 103° F July 18, operated on Large foreign body removed from arm Wound dressed with sulphonamide vaseline July 19, given 8 g sulphonamide July 20, transferred to another hospital. Wounds looked clean, arm in sling, noisy and excited July 21, again noisy and irritable Left arm swollen and painful, condition suggestive of cellulitis Wounds explored with sinus forceps, no frank pus July 22, attempted to hit anyone who came near him Foments applied to left arm July 23, more excited, got out of bed and tried to hit another patient Complained of pain in chest Slight twitching of the arm noticed T 102° F July 24, mild tonic spasms began which increased during day At 7 PM temperature had risen to 107° Died at 7 45

Treatment ATS on July 24 at 4 30 PM, 60,000 units partly intravenously partly intramuscularly, at 6 PM 90,000 units intramuscularly

Autopsy left forearm and arm greatly swollen, two large wounds on posterolateral aspect of left arm with superficial healing; spiral fracture of middle third of humerus, and all deep muscles showed extensive necrosis, almost colliquative, no actual pus or gas present, liver and kidneys showed toxic changes Portions of muscle from the upper and lower ends of triceps, and the deep surface of the trapezius, and a portion of bone marrow from the humerus all yielded a growth of *Cl tetani*, type III. Other anaerobes were present, but have not yet been identified

Cases 17 and 18, apparent failures of active immunisation, fall into a different category from case 7 Both have in common the presence of a mass of necrotic tissue, in which there was ample opportunity for the tetanus bacillus to flourish freely and to produce large quantities of toxin In neither was there evidence of an active pyogenic process to draw attention to the fact that the wound required immediate surgical intervention In case 17 primary suture was carried out and progress was normal until tetanic symptoms appeared Removal of the plaster showed the presence of necrosis of the soft tissues with foul pus In case 18 the peculiar mental reactions of the patient made adequate examination difficult Even so, exploration of the wound with sinus forceps failed to reveal frank pus on July 21 and at autopsy on July 24, though the arm was found to be much swollen with extensive *necrosis* of all the deep muscles, there was neither pus nor gas In both cases then, conditions were ideal for the massive production of tetanus toxin, and *it is reasonable to* assume that it was manufactured on a scale which far outpaced the antitoxin production of the patient's reticulo-endothelial system

The interval which elapsed between wounding and the appearance of symptoms in these two cases is significant Case 17 had two doses of toxoid 20 months before he was wounded If his reaction was normal, he probably had an average but not a large amount of free antitoxin in his circulation, and a shadow-factory ready to come into production when stimulated However, the facilities for toxin production in the wound were such that sufficient was elaborated not only to overcome the barrier of the free antitoxin, but to result in the onset of symptoms on the 5th day with a fatal termination 36 hours later (i e before his defence mechanism could come into action) Case 18 received two doses of tetanus toxoid at the beginning of 1941, and a third dose in April, 1942, 3 months before he was wounded It is therefore to be expected that the level of his circulating antitoxin would be high, and that the response of his defence mechanism would be good There can be little doubt that such was the case Despite the fact that tetanus infection was widespread throughout the left upper arm and shoulder, so that toxin production must have been on a very extensive scale, symptoms did not appear until the 9th day The most probable explanation is that the antitoxin barrier was so high that for a time it sufficed to stem even this exceptionally intense invasion Ultimately, however, a stage was reached when toxin dominated and symptoms ensued

TETANUS IN NON-IMMUNISED SUBJECTS

Of the 18 cases, 13 were in the non-immunised series Of these 13, one received a single dose of 1 c cm of tetanus toxoid 3½ months before he was wounded, 3 others were Italian prisoners and 1 an Eritrean prisoner, regarding whose inoculation history nothing is known, 6 cases were fatal, so that the mortality rate was less than 50%

Information about the interval which elapsed between wounding and the appearance of symptoms is lacking in 2 of the fatal cases The average for the remaining 4 is 16 days, 3 of these received prophylactic ATS, 1 did not; the interval in the last was 17 days In the 7 non-fatal cases, the average interval was 14 9 days None of these seems to have received any prophylactic ATS, though it was possibly given without being recorded The numbers are too small to be significant, but the general tendency towards a long incubation period is interesting It cannot be attributed to antitoxin treatment, but may in some way be related to effective surgical treatment resulting in the removal of all but the most trivial foci of infection

CASE 1—Italian prisoner History of active immunisation unknown Date of wounding unknown Small wound 1 5 cm in diameter above right knee No muscle involvement No record of prophylactic ATS Jan 13, 1941, onset of generalised tetanic spasms which quickly became violent, died 5½ hours after onset

Treatment ATS 50,000 units intramuscularly *Cl tetani*, type v, cultured from wound *Chemotherapy* no record

CASE 2—Italian prisoner History of active immunisation unknown Jan 3, 1941, shrapnel wounds of outer aspect of left thigh, involving muscle Dressed with sulphapyridine and eusol No record of prophylactic ATS Jan 15, stiffness of jaw, neck and back, 12 days after wounding Jan 19, generalised spasm Jan 21, last generalised spasm Recovered

Treatment with ATS received 117,000 units, including Jan. 18, 40,000 units intramuscularly, 4000 units intrathecally, Jan 19, 15,000 units, Jan 26, 20,000 units, Feb 3, 20,000 units, all intramuscularly *Cl tetani*, type III, isolated from wound *Chemotherapy* only as noted

CASE 3—Italian prisoner No record of this case, other than a culture with a serial number, and a statement that the patient had died with the symptoms of tetanus Attempts to obtain further information unavailing *Cl tetani*, type I, grown from culture

CASE 4—Eritrean prisoner No definite history of immunisation, unlikely Wounded in right thigh. mitted hospital 28 days later with healing ulcer 6 cm and small sinus going down to muscle Had flexion defo and was manipulated under an anæsthetic, 3 days developed stiffness of jaw and had a mild convulsion ATS (dose not stated) and recovered without further toms Organisms morphologically resembling *Cl* cultured from sinus No other details available *Chemotherapy* no record

CASE 6—German prisoner Not actively immunised. Wounded probably June 16, 1941 Given ATS 3000 units. Admitted base hospital June 21 with infected foul smelling sucking wound over right shoulder Slow progress July 9, tonic spasms of left thigh muscles 23 days after wounding July 10, worse, with severe clonic spasm of great severity lasting 2–3 sec Attributed to salt loss and treated accordingly July 11, much the same July 14, still cramps, left knee now completely flexed Aug 1, leg less flexed, now could be extended almost completely Possibility of symptoms being due to upper motor neuron lesions considered. Aug 10, general condition much improved Aug 30, further operation on thorax Large foreign body removed from posterior wall Sept 6, return of cramp like pains in legs Thigh muscles in spasms Pain behind angles of jaw Sept 8, definite trismus, 90,000 units ATS given (route not specified) Sept 9, died *Cl tetani*, type v, recovered from wound *Chemotherapy* sulphapyridine 1 g three times daily from June 27 for an unspecified period

CASE 8—South African Not actively immunised Wounded Nov 23, 1941 Multiple gunshot wounds, thigh and genitalia No prophylactic ATS Trismus appeared Dec 8, 15 days after wounding Progressed until Dec 15, masseters, neck muscles, back muscles and rectus abdominis all spastic No tetanic convulsions Improvement started Dec 17 Recovered

Treatment with ATS received a total of 400,000 units, including Dec 11, 3000 units subcutaneously and 40,000 units intramuscularly, Dec 12, 200,000 units intravenously, Dec 14, 20,000 units intramuscularly *Cl. tetani*, type v, isolated from culture *Chemotherapy* sulphanilamide 4 g on Nov 24, 1 g on Nov 30 and Dec. 1 Sulphapyridine 1 g on Dec 10

CASE 9—German prisoner Not actively immunised Wounded buttock Nov 24, 3000 units ATS given on Nov 26 Symptoms appeared Dec 10, after interval of 16 days Trismus going on to generalised spasm, 50,000 units ATS given on Dec 10 Died Dec 11 No culture taken *Chemotherapy* no record

CASE 10—German prisoner Not actively immunised Wounded Nov 29 in right leg half-way between knee and ankle *No record of prophylactic ATS* Nov 31, leg amputated Dec 16, symptoms of tetanus appeared, after interval of 17 days, 60,000 units ATS given Dec 20, died *Cl tetani*, type v, isolated from culture *Chemotherapy* no record

CASE 11—Indian Not actively immunised Dec 6, 1941, bomb wound right ankle No ATS given Dec 13, foot amputated Dec 18, trismus developed, 12 days after wounding ATS 117,000 units given Dec 24, symptoms passed off No culture taken *Chemotherapy* no record

CASE 12—South African Not actively immunised. Dec 12, 1941, gunshot wound of buttock with moderate laceration of muscle Dec 13, superficial *excision* Dec 19 (a week after wounding), ATS 3000 units Dec 20, slight spasms of affected limbs, 8 days after wounding Dec 22, wide excision and drainage Gradually developed generalised spasms and opisthotonus Dec 23, died

Treatment with ATS Dec 21, 80,000 units intramuscularly and intravenously, Dec 22, 80,000 units intravenously, Dec 23, 80,000 units intravenously No culture taken *Chemotherapy* sulphonamide powder locally

CASE 13—South African Not actively immunised Nov 27, 1941, wounded in right wrist, shoulder and both legs No record of prophylactic ATS Dec 24, developed stiffness of ankle and recurring spasm of leg muscles *Dec 28*, typical tetanic spasm lasting 3½ min, with risus sardonicus and opisthotonus Two further shorter spasms Local spasms gradually disappeared Recovered

Treatment with ATS Dec 28, 60,000 units, intravenously, Dec. 29, 200,000 units intravenously. *Cl tetani*, type VII. isolated in culture *Chemotherapy* no record

CASE 14 —South African Not actively immunised Jan. 18, 1942, gunshot wound inner side left thigh No prophylactic ATS Jan 18 and 26 surgical intervention Feb 14, 27 days after wounding, onset of tetanic spasms, which became generalised

Treatment Feb 15 and 18, 200,000 units ATS intravenously on each day Total amount given, 600,000 units Steady progress to recovery No material submitted for culture *Chemotherapy* prophylactic sulphonamide "by mouth and powder into the wound" No further details

CASE 16 —South African Tetanus toxoid, 1 c cm March 11, 1942 June 28, bomb wound left calf, much destruction of muscle No record of prophylactic ATS July 1, after debridement wound treated with sulphanilamide powder July 6, 8 days after wounding, developed recurring spasms of calf every 15–20 min, trismus, and risus sardonicus Opisthotonus and violent spasms of back after ATS Wound curetted and again treated with sulphanilamide powder Tetanic spasms continued but became less severe, all symptoms finally disappearing on July 15

Treatment with ATS July 6, 15,000 units intrathecally, 15,000 units intramuscularly, and 12,000 units intravenously, later 60,000 units intravenously, and tetanus toxoid 1 c cm July 7–16, 420 000 units ATS intravenously *Chemotherapy* local treatment as above From July 7, course of sulphapyridine given, exact dosage not recorded *Cl tetani*, toxigenic strain, grown from wound This appears to be a new type

In case 16 symptoms developed within 8 days of wounding Since a single dose of toxoid produced no circulating antitoxin, the dose given can have had no influence in preventing the onset of the disease There is nothing to be gained by giving tetanus toxoid to a patient in whom symptoms of tetanus have already appeared, the toxin from the wound should already have provided the stimulus

As far as these cases are concerned, the effect of chemotherapy as a prophylactic measure can be dismissed in a sentence In none of them is there any record that the standard course of treatment, or in fact any adequate quantity of the sulphonamide drugs, has been given; so that no conclusions for or against their use can be drawn

DISCUSSION

The evidence presented in this report indicates the value of active immunisation against tetanus, but the fact that 5 cases developed in inoculated men shows that this measure has its limitations A study of these 5 cases brings out two possible causes of failure The first—lack of response to immunisation—may possibly be overcome by the third dose of toxoid which is now being given In addition to this, the more lightly infected cases are likely to receive adequate passive protection from the single dose of antitoxin which is recommended The second cause of failure—massive and fulminating infection—introduces another factor In cases 17 and 18 immunisation may or may not have been successful, but in both there is evidence to suggest that the focus of infection was so extensive that toxin was formed rapidly and in sufficient quantity to outpace the antitoxin production of the defence mechanism It seems probable, particularly in case 18, that the outcome would have been the same irrespective of the state of immunity of the patient

The lesson to be drawn from these 2 cases is clear The protection afforded by active immunisation has its "ceiling" It appears capable of inactivating toxin from a wound which has received adequate surgical attention and from which the bulk of necrotic tissue has been removed It is *not* capable of neutralising the massive quantities of toxin formed in extensive areas of necrotic tissue Careful surgical treatment with removal of all dead tissue is therefore an important factor in preventing the onset of tetanus This is a point which is liable to be overlooked from the theoretical standpoint, though in practice it has not been neglected, since it forms part of the routine treatment of all wounds as a preventive against the more common condition, gas gangrene

Case 17 shows that the closed plaster technique is not without its dangers in the exceptional case In this patient the presence of a mass of necrotic tissue was unsuspected until symptoms supervened, when it was too late for him to benefit from its removal This report relates to a country in which the risk of tetanus is relatively low It still remains to be seen if active immunisation is capable of combating the heavy infections likely to be incurred in such places as France or Flanders

SUMMARY

The chances of becoming infected with tetanus in the Middle East, and particularly in the Western Desert, are much less than those in France and Flanders Nevertheless, they are greater than might be expected, as can be seen from the presence of tetanus spores in soil samples, and tetanus bacilli in wounds

In the first two years of war in the Middle East 18 cases of tetanus were reported

The distribution of cases among inoculated and uninoculated troops affords evidence of the value of active immunisation Nevertheless 5 cases, 3 of them fatal, developed in inoculated men The protection afforded by active immunisation therefore has its limitations

In one of these fatal cases, there seems to have been little or no response to immunisation with two doses of toxoid This emphasises the necessity for giving a third dose of toxoid, and for heightening the barrier by giving a dose of antitoxin after the man is wounded

In the other 2 fatal inoculated cases failure can be attributed to overwhelming infection resulting from the presence of masses of necrotic tissue in the wound This indicates that the immunity afforded by inoculation with tetanus toxoid has its "ceiling," and that adequate surgery is an essential complementary part of the preventive treatment of tetanus

We wish to thank the various surgeons and pathologists in the Middle East Force who have supplied data, and provided cultures from the wounds, and Mr A T Glenny of the Wellcome Physiological Research Laboratories who carried out the titrations in the experiments recorded in table I

LONG INCUBATION PERIOD OF SYPHILIS AND AN ELUSIVE PRIMARY SORE

MARY MICHAEL-SHAW, M B LOND
DIRECTOR, V D DEPARTMENT ROYAL FREE HOSPITAL
MEDICAL OFFICER, V D DEPARTMENT, MOTHERS' HOSPITAL

THE following two cases seem worth reporting now when many contacts of patients proved to be suffering from venereal disease are presenting themselves for examination

CASE 1 —A married woman, aged 24, came for examination on Jan 29, 1942, having heard from her husband that he was in a military hospital suffering from early primary syphilis (the latter fact was confirmed) Intercourse had taken place 6 days previously and the husband had worn a sheath. The only clinical finding was that glands were palpable in the groins, but the patient was of the thin type in whom these glands can not uncommonly be felt Wassermann and Kahn tests were negative as were smears and cultures from urethra and cervix for gonococci The patient was asked to return in 4 weeks' time or before if she noticed anything wrong

She came back on Feb 26 Again there was no clinical evidence of infection and Wassermann and Kahn tests were again negative Similar advice was given and the patient returned on April 1, and again on April 23, with the same negative results By the time the Wassermann of the 23rd was reported on she had been under observation for nearly 13 weeks, and in view of this and the history of her husband having worn a sheath she was discharged

Three weeks later, on May 20, she returned complaining of "spots" on the vulva Two small sores were found on the left labium majus, unfortunately no scraping was taken but Wassermann and Kahn tests were returned positive and these were repeated after an initial arsenic injection and again were positive There had been no exposure to infection since marital intercourse on Jan 23, the patient was coöperative and intelligent, she had originally been informed as to early signs Even if these sores appeared directly after her last examination one must conclude that the incubation period was some 90–110 days

CASE 2 —A married woman, aged 28, came for examination on Aug 8, 1942, because her husband had been admitted to a military hospital on Aug 4 with early primary syphilis The of the wound with sinus forceps failed to reveal frank pus on July 21, and at autopsy on July 24, though the arm was found to be much swollen with extensive necrosis of all the deep muscles, there was neither pus nor gas In both cases, then, conditions were ideal for the massive production of tetanus toxin, and it is reasonable to assume that it was manufactured on a scale which far outpaced the antitoxin production of the patient's reticulo-endothelial system

The interval which elapsed between wounding and the appearance of symptoms in these two cases is significant. Case 17 had two doses of toxoid 20 months before he was wounded If his reaction was normal, he probably had an average but not a large amount of free antitoxin in his circulation, and a shadow-factory ready to come into production when stimulated However, the facilities for toxin production in the wound were such that sufficient was elaborated not only to overcome the barrier of the free antitoxin, but to result in the onset of symptoms on the 5th day with a fatal termination 36 hours later (i e before his defence mechanism could come into action) Case 18 received two doses of tetanus toxoid at the beginning of 1941, and a third dose in April, 1942, 3 months before he was wounded It is therefore to be expected that the level of his circulating antitoxin would be high, and that the response of his defence mechanism would be good There can be little doubt that such was the case Despite the fact that tetanus infection was widespread throughout the left upper arm and shoulder, so that toxin production must have been on a very extensive scale, symptoms did not appear until the 9th day The most probable explanation is that the antitoxin barrier was so high that for a time it sufficed to stem even this exceptionally intense invasion Ultimately, however, a stage was reached when toxin dominated and symptoms ensued

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CASE 10 —German prisoner Not actively immunised Wounded Nov 29 in right leg half way between knee and ankle No record of prophylactic ATS Nov 31, leg amputated Dec 16, symptoms of tetanus appeared, after interval of 17 days, 60,000 units ATS given Dec 20, died *Cl tetani,* type v, isolated from culture *Chemotherapy* no record

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CASE 12 —South African Not actively immunised Dec 12, 1941, gunshot wound of buttock with moderate laceration of muscle Dec 13, superficial excision Dec 19 (a week after wounding), ATS 3000 units Dec 20, slight spasms of affected limbs, 8 days after wounding Dec 22, wide excision and drainage Gradually developed generalised spasms and opisthotonus Dec 23, died

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CASE 13 —South African Not actively immunised Nov 27, 1941, wounded in right wrist, shoulder and both legs No record of prophylactic ATS Dec 24, developed stiffness of ankle and recurring spasm of leg muscles Dec 28, typical tetanic spasm lasting 3½ min, with risus sardonicus and opisthotonus Two further shorter spasms Local spasms gradually disappeared Recovered

Treatment with ATS Dec 28, 60,000 units, intravenously, Dec 29, 200,000 units intravenously *Cl tetani,* type VII, isolated in culture *Chemotherapy* no record is compared directly with that of 40 mg of sulphanilamide applied locally an hour after infection, as in expt 3, table III, it will be seen that proflavine is much more active than sulphanilamide in preventing the development of *Cl welchii* infection Expt 4, table III, compares the action of proflavine and sulphathiazole at 1½ hours after infection and again shows the superiority of proflavine In the latter experiment combined treatment with full doses of proflavine and sulphathiazole appears to be of less value than treatment with either drug alone

Penicillin —A sample of penicillin was kindly supplied by Dr C G Pope of the Wellcome Physiological Research Laboratories This preparation, PN183, consists of a solution of the barium salt and contains 170 Oxford units per c cm The dose employed in mice was 0 2 c cm, equivalent to 34 Oxford units This dose was sufficient to save all the mice in three experiments (table I) Expt 2, table III, shows that penicillin is also of great value in preventing death from *Cl welchii* when it is administered after a delay of an hour, and is also of some value in delaying death when it is administered 3 and 6 hours after infection The superiority of penicillin to proflavine in local treatment is shown in expt 5, table III, where the effect of immediate and delayed administration of the two drugs is directly compared From these results it appears that penicillin is of greater value than proflavine or the sulphonamides in preventing the development of *Cl welchii* infection

Gramicidin —A sample of tyrothricin, the preparation used in these experiments, was supplied to us by the Medical Research Council through the courtesy of Sir Henry Dale It is a water insoluble, alcohol soluble, fraction of the bactericidal substance originally prepared by Dubos (1939) from a soil bacterium It contains both gramicidin, active against gram-positive bacteria, and tyrocidine, which is also active against gram-negative organisms (Hotchkiss and Dubos 1940) In our hands this preparation inhibits the growth cultures of *Cl welchii*, *Cl septique* and *Cl œdematiens* in a concentration of 1 0 µg per c cm and has occasionally prevented the growth of *Cl welchii* in a concentration of 0 1 µg per c cm

The action of tyrothricin on the development of *Cl welchii* in mice was tested by injecting a suspension in saline, immediately after infection The results were discouraging in that most of the treated mice died within 24 hours and none survived to the third day even with doses of 2 µg It appears therefore that although tyrothricin has a powerful bacteriostatic action on *Cl welchii* in vitro it is not likely to give commensurate results clinically in its present form

TABLE II—COMPARATIVE EFFECTS ON *Cl welchii* INFECTION IN MICE OF ZINC PEROXIDE AND SULPHANILAMIDE, HYPEROL AND ZINC OXIDE, AND OF PROFLAVINE AND SULPHANILAMIDE, ADMINISTERED LOCALLY AT THE TIME OF INFECTION

Expt	Drug	Mice	Mice dying on day			Survived 3 days	Av no of days survived
			1	2	3		
1	Zinc peroxide 20 mg	12	1	3	0	8	2 3
	Sulphanilamide 40 mg	12	0	2	2	8	2 5
2	Zinc peroxide 10 mg	12	2	2	0	8	2 2
	Hyperol 100 mg	12	6	1	0	5	1 3
3	Zinc peroxide 20 mg	6	3	3		0	0 5
	Zinc oxide 20 mg	6	3	3		0	0 5
4	Proflavine 0 5 mg	12	0	1	0	11	2 8
	Sulphanilamide 40 mg	12	3	0	1	8	2 2

In each experiment a control group of untreated mice, equal in number to the treated groups, all died within 24 hours

TABLE III—EFFECT ON *Cl welchii* INFECTION IN MICE OF DELAYED LOCAL ADMINISTRATION OF PROFLAVINE AND PENICILLIN AND COMPARATIVE EFFECTS OF DELAY ON PREVENTIVE ACTION OF PROFLAVINE, SULPHANILAMIDE, SULPHATHIAZOLE AND ZINC PEROXIDE, AND OF PROFLAVINE AND PENICILLIN

Expt	*Drug*	Treatment given after hours	Mice	Mice dying on day			Survived 3 days	Av no of days survived
				1	2	3		
1	Proflavine, 1·0 mg	0	6	2	0	0	4	2 0
		1	6	2	0	1	3	1 8
		3	6	4	2		0	0 3
		6	6	6			0	0
2	Penicillin, 34 units	0	6	0	0	0	6	3 0
		1	6	1	0	0	5	2 5
		3	6	2	2	2	0	1 0
		6	6	3	3		0	0 5
3	Proflavine, 0 5 mg	1	12	6	0	0	6	1 5
	Sulphanilamide 40 mg	1	12	8	1	0	3	0 8
	Zinc peroxide 20 mg	1	12	12			0	0
4	Proflavine 0 5 mg	1½	6	3	1	0	2	1 2
	Sulphathiazole 40 mg	1½	6	3	2	0	1	0 8
	Proflavine 0 5 mg and sulphathiazole 40 mg	1½	6	3	3		0	0 5
5	Proflavine 0 5 mg	0	12	3	0	0	9	2 3
		2	12	6	3	0	3	1 0
	Penicillin 34 units	0	12	0	0	0	12	3 0
		2	12	1	0	0	11	2 8

In each experiment a control group of untreated mice, equal in number to the treated groups, all died within 24 hours

DISCUSSION

In trying to assess the true preventive and therapeutic values of the remedies reported on here an endeavour has been made to produce an experimental infection comparable to the natural infection Human gas gangrene develops when limb muscles have been severely lacerated and simultaneously contaminated with soil bacteria In the natural disease the clostridia are in the resting (sporing) stage and thus when the wound is infected there can be none of their own bacterial aggressin (toxin) present The inciting agent was shown by Bullock (Gye) and Cramer (1919) in the last war to be in all probability the calcium ion They showed that pathogenic clostridia washed free of all toxin were no longer capable of inciting an infection but could do so if a small amount of calcium chloride was injected along with them

We have therefore induced our experimental infection in mice with toxin-free clostridia, using calcium chloride as the aggressin, the infective dose being so standardised that about 100 lethal (infecting) doses were used as the test inoculum This dose produces at first a purely local infection which in the course of 3 or 4 hours becomes generalised as shown by the presence of clostridia in the blood Thus we have a local and general infection on which the remedies can be tested, and these present different problems

Experimental work on the action of zinc peroxide on *Cl welchii* infection has given somewhat conflicting results Reed and Orr (1942) found that in *Cl welchii* infection in guineapigs the local application of zinc peroxide was a powerful prophylactic and that it was only slightly less effective than sulphathiazole in an established infection On the other hand, Bliss, Long and Smith (1941) found that zinc peroxide administered locally had no effect on *Cl welchii* infection in mice but was effective against infections with *Cl septique*, *Cl œdematiens* and *Cl tetani* Our results show that zinc peroxide is an effective prophylactic against *Cl welchii* infection, but is without action once the organisms get into the tissues This result would be expected if zinc peroxide acted through its oxygenating action, which can have a considerable effect as has been shown in our experiments with hyperol, because this would be more effective on unprotected bacteria than on bacteria protected from oxidative changes by the tissue fluids The tissues may also act as a deterrent if, as Garrod (1940) has suggested and we have shown here, the zinc ion plays a large part in its antibacterial action

Hawking (1941) has shown that proflavine will prevent infection of wounds in guineapigs by anaerobes subsequently inserted On reopening such wounds on the third day he found fairly healthy tissues and only small numbers of bacilli He however decided that the usefulness of proflavine was limited in view of the mediocre results obtained with acridine compounds in patient had douched that morning and there were no clinical findings except for palpable glands in the groin. All pathological tests were negative for gonorrhœa and syphilis and the patient returned in 5 days to hear these results and for further examination. She was then found to have a thin frothy discharge due to *Trichomonas vaginalis*; smears, cultures, Wassermann and Kahn were again negative. Antiseptics were withheld and only palliative treatment for the trichomonas infection advised. Further examinations and blood tests were carried out Aug. 20 and Sept. 10; *no clinical* evidence of syphilis was found and Wassermann and Kahn tests were again negative.

The patient returned on Oct. 15. Externally there was no *sign of infection*, and a speculum was passed to examine vagina and cervix. After swabbing the cervix was clear and uninflamed but a minute cream coloured spot at one edge of the speculum was seen. The first thought was that a wisp of cotton-wool had been left behind after swabbing, but on slightly withdrawing the Ferguson speculum the "wisp" became one corner of a somewhat triangular ulcer high on the lateral wall of the left fornix. The speculum was removed but digital examination only with difficulty detected the ulcer and a satisfactory view was only obtained by using a bivalve speculum. Clinically the ulcer was syphilitic; a scraping showed *Spirochæta pallida* and blood tests were returned positive.

These two cases illustrate the ease with which early syphilis can go undetected even when being searched for. In the first the difficulty arose from the long incubation period coupled with the minor fact of a sheath having been used during intercourse; in the second from the unusual position of the primary sore in the lateral fornix.

ZINC PEROXIDE, PROFLAVINE AND PENICILLIN IN EXPERIMENTAL CL. WELCHII INFECTIONS

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EVEN with the most up-to-date treatment (surgery, serum therapy and chemotherapy) gas gangrene remains a serious complication of battle and air-raid wounds on account of its high fatality (30%–50%). The rapidity with which the disease can develop in torn and lacerated muscles makes preventive treatment difficult, and this is particularly the case with *Clostridium welchii*, the commonest cause of gas gangrene in Western Europe. We are now trying to find out the most suitable chemotherapeutic and specific treatment immediately after wounding. We have already shown that the sulphonamides are of value in preventing the development of gas gangrene in mice when administered locally in large quantities and soon after infection (McIntosh and Selbie 1941). Several publications, notably those of Hawking (1941) and Reed and Orr (1941) have supported our findings. Other further studies include investigations on the action of zinc peroxide, proflavine, penicillin and gramicidin on *Cl. welchii* infection.

MATERIAL AND METHODS

The strain of *Cl. welchii* and the methods used were the same as in our previous experiments except that bacterial suspensions for infection were prepared from 18-hour anaerobic cultures in 4% Difco proteose-peptone in distilled water. With this medium it was possible to obtain highly virulent cultures with much greater regularity than with Robinson's meat broth. Throughout the experiments we found that the intramuscular injection in the right thigh of 0.1 c.cm. of a washed suspension containing 2000 or 4000 million *Cl. welchii* and 0.1 c.cm. of 5% calcium chloride was sufficient to kill all untreated mice within 24 hours. This dose has usually been equivalent to at least 100 lethal doses and is therefore a severe test of preventive and therapeutic measures. It will become evident, however, that there were considerable variations in the severity of the infection, in that there was a variable response treatment with the same drug. The substances to tested for their prophylactic or therapeutic effect injected into the right thigh at the site of immediately after or at varying intervals after

EXPERIMENTAL RESULTS

The results are presented in a series of tables in which the mortality for only 3 days is considered since mice surviving that time usually survive indefinitely. The average number of days survived, shown in each table, is obtained by dividing the total number of whole days survived in each group of mice by the number of mice in the group. The sum of a number of experiments with sulphanilamide, done during the same period, is included in table I for comparison.

TABLE I—EFFECT ON *Cl. welchii* INFECTION IN MICE OF SULPHANILAMIDE, ZINC PEROXIDE, PROFLAVINE, AND PENICILLIN, ADMINISTERED LOCALLY AT TIME OF INFECTION

Drug	No. of expts	Mice	Mice dying on day			Survived 3 days and %	Av. no. of days survived
			1	2	3		
Sulphanilamide 40 mg.	7	60	11	13	5	31 (52)	1.9
Zinc peroxide 20 mg.	4	36	7	7	4	18 (50)	1.9
Proflavine 0.5 mg.	6	48	7	3	1	37 (77)	2.4
Penicillin 34 units	3	24	0	0	0	24 (100)	3.0

A control group of untreated mice in each experiment all died within 24 hours.

Zinc peroxide.—The preparation used in these experiments contains about 20% zinc peroxide. It will be seen from table I that 20 mg. of zinc peroxide is as effective as 40 mg. of sulphanilamide when administered locally at the time of infection. This result is confirmed by expt. 1, table II, where the two drugs are compared directly. In expts. 2 and 3, table II, the prophylactic action of zinc peroxide is compared with 'Hyperol' (Richter), a solid preparation of hydrogen peroxide and urea yielding 35% hydrogen peroxide by weight, and with zinc oxide. These experiments show that 10 mg. of zinc peroxide is of more value than 100 mg. of hyperol and that zinc oxide is as effective as zinc peroxide. It seems therefore that, although the oxygenating chemicals may be of some value in preventing the development of *Cl. welchii* infection, the zinc ion probably plays a large part in the bacteriostatic action of zinc peroxide. Tests for the effect of delay on the local application of zinc peroxide and hyperol show that an hour's delay in administration totally annuls their preventive effect, as is shown for zinc peroxide in expt. 3, table III. It can be concluded that although zinc peroxide has a powerful bacteriostatic action on *Cl. welchii* it is unable to exert this action once the organisms have invaded the tissues.

Proflavine.—The usual dose of proflavine used was 0.1 c.cm. of a 0.5% solution in distilled water, equivalent to 0.5 mg. of the drug. This dose is ⅙ of the LD 50 dose as determined by Rubbo, Albert and Maxwell (1942) and is probably less than half the maximum tolerated dose. It will be seen from table I, which summarises a number of experiments, that 0.5 mg. of proflavine is of greater value than 40 mg. of sulphanilamide in preventing the development of *Cl. welchii* infection when it is applied locally at the time of infection. The superiority of proflavine to sulphanilamide in this respect is borne out by expt. 4 in table II, where their prophylactic action is compared directly. A further test is required to determine whether proflavine, like the sulphonamides, can exert its bacteriostatic action on *Cl. welchii* which have invaded the tissues. Such a test is shown in expt. 1, table III; when the local administration of proflavine is delayed for an hour its preventive value is only slightly diminished, but after 3 or more hours, when the organisms have invaded the blood-stream, treatment with proflavine is apparently of little or no value. These results are similar to those previously obtained with sulphanilamide (McIntosh and Selbie 1941), except that in delayed treatment the preventive action of proflavine is greater than that of sulphanilamide. When the effect of 0.5 mg. of proflavine ill also be an economic problem for other hospitals and it seems likely that, at a moderate estimate, several onths must elapse before the psychotic population can e catered for

The following scheme was carried out on the male ulation—about 1100 patients—in this hospital n May, 1941, onwards the erythrocyte sedimentation- of every patient in the hospital and of every new ission was measured, excluding those already ill with own active organic disease Those with sedimenta- s of over 14 mm per hour were radiographed les other active organic disease was found to account or creased rate Those with sedimentation-rates 7 and 14 mm per hour were tested a few weeks in if the rate had risen to 14 mm per hour, or over were also radiographed Altogether 384 X-ray graphs were taken, but in this number were luded some examined a second time for follow-up rposes

It has long been recognised that the sedimentation-rate s not per se a diagnostic method—that in fact it is erely an index of active organic disease More import- nt still, active tuberculosis has been known to exist in he presence of a normal sedimentation-rate, as Trail entions The real question is, how often this anomaly s found. We suggest that it is rare In 16 months xperience of this method, in the course of which many housands of sedimentation-rates have been performed, e have not yet found a case of active pulmonary tuber-ulosis having a sedimentation-rate within normal limits

Of those radiographed 90 showed appearances of ctive disease, and 26 were considered to be suspicious— total of 116 cases These cases have been observed ver a year The average loss of weight per person rom June, 1938, to June, 1941 (when the disease was diag-osed), for the 116 cases was 14½ lb, to the nearest ½ lb his may be compared with an average loss of weight in 82 ambulant non-tuberculosis patients of 8¼ lb over he same period During the investigation 54 of the 116 atients had pyrexia of varying degree, and in 17 ubercle bacilli were found in the sputum, fæces, or leural fluid The fact that the bacillus was found in uch a small number of cases was partly due to the early tage or low activity of the disease in many cases, but lso to lack of cooperation from patients in providing putum The deteriorated type of schizophrenic who eemed most prone to this disease, coughs but little and wallows his sputum Bacteriological investigations ust therefore be made on the fæces, by culture on Lowenstein-Jensen medium

With a few exceptions our patients were treated in bed or a time, the aim being to bring the sedimentation-rate ack to normal limits On the whole this method was airly successful (see table)

SEDIMENTATION-RATES BEFORE AND AFTER TREATMENT

Sedimentation rates mm. p h.	Number of cases		Sedimentation rates mm p h	Number of cases	
	At times of diagnosis	At end of review		At times of diagnosis	At end of review
100+	1	0	40–	10	6
90–	0	0	30–	21	6
80–	2	1	20–	31	22
70–	5	3	14–	30	17
60–	6	1	5–	3	46
50–	6	2	1–	0	11

Of the 116 cases, 40 still remain in bed, 70 are ambulant and 6 have died of pulmonary tuberculosis The average gain in weight during treatment has been 6¼ lb The results of examination of sedimentation-rates for 1942 (excluding the 7–13 mm p h reports which are not yet complete) have exceeded expectation The total number of high sedimentation-rates has been lower, and after excluding other causes only 52 patients were found to require radiological examination Of these 14 were considered by the radiologists to show signs of active disease, and 9 to be suspicious, a total of 23—almost half those radiographed

The method entails much less labour than might be thought, blood being taken and sedimentation tubes filled in the ward All patients in bed are weighed weekly, and sedimentation-rates of all cases are estimated monthly In this way activity in an ambulant case is readily detected—a point of great importance we think, since many of these cases are stuporous and inaccessible The sedimentation-rate of all patients is again being investigated at the beginning of the second year

Technique—A 2 c cm Record syringe with a small-bore needle is filled to the min 8 mark with 3 8% sodium citrate, and blood is drawn up to the min 40 mark The contents are mixed in the syringe, ejected into a centrifuge tube, drawn up 5 times in a Westergren 200 mm tube and placed in the rack Readings (taken at bottom of clear fluid level) are taken at the end of the first and second hours, and the SR calculated according to the formula

$$\frac{A+\frac{B}{2}}{2} \quad \text{where } A = \text{first hour reading and } B = \text{second hour reading}$$

The sodium citrate when issued in bulk was prone to develop moulds, and we are indebted to Mr R H Henriksen,[3] then pharmacist at this hospital, who found, after a number of experiments, that phenylmercuric nitrate did not affect the sedimentation-rate It preserves the citrate solution when added in 0 002% dilution

As the MRC report clearly shows this is not essentially a war-time problem of the mental hospitals, adverse conditions must already have been present during peace A disproportionate number of our patients were found in the "wet and dirty" ward of the hospital Here we find the deteriorated psychotic, doubly incontinent, mute and inaccessible patients, uncooperative in the extreme We suggest that it is this type of ward which is the nidus of tuberculosis (and dysentery) in mental hospitals, and that unless objective examinations are often carried out on these patients, they will disseminate their disease before they are discovered

In peace-time we may find our method not ideal, but at present we suggest it as an efficient stop-gap

We wish to thank Dr W Allen Daley, medical officer of health to the LCC, and Dr W A Caldwell, medical superintendent of this hospital, for permission to publish these results, and the LCC Central Pathological Laboratory, and the radiological staff of an EMS hospital for their help

SLIT-LAMP MICROSCOPE IN NUTRITION SURVEYS

OBSERVATIONS IN SCHOOL-CHILDREN

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SEVERE deficiency of vitamin A has long been known to result, in animals and man, in keratinisation of the conjunctiva and sometimes also of the cornea Severe deficiency of riboflavin in rats was shown by Bessey and Wolbach (1939) to lead to corneal vascularisation American workers have recently suggested that mild deficiency of either of these dietary factors results in slight conjunctival or corneal changes which can be detected by examination with the slit-lamp Kruse (1941) describes a continuous series of abnormalities of the conjunctiva which he believes express stages of severity of deficiency of vitamin A Beginning with the normal eye, in which both the superficial and the deep layers of the conjunctiva are smooth and transparent, he describes a gradual diminution in light transmission, the conjunctiva becomes wrinkled, the deep and then the superficial layer becomes translucent and later opaque, and eventually discrete raised keratinised patches —Bitot spots—are seen, mild lacrimation and photophobia are observed during the examination

With regard to deficiency of riboflavin, Sydenstricker and his co-workers find an increased limbal vascularisation (Sydenstricker et al 1940, Kruse et al 1940) According to their description, in the earliest stages there is an engorgement of the limbic plexus and an increase in the number of capillary loops, which extend to the corneoscleral junction Later, the cornea itself is invaded by capillary "streamers" running centripetally, in the

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[3] *Pharmaceut J* 1942, 94, 14

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the last war, presumably through their inability to reach bacteria situated inside the tissues But we have shown that proflavine is not only more active than sulphanilamide in preventing the development of *Cl welchii* infection in mice but that it is at least as active as sulphanilamide and sulphathiazole in an infection that has already developed Proflavine has also the advantages of being bacteriostatic to a wide range of organisms and of having a low toxicity to tissue, as Garrod (1940) has emphasised Although Jacoby, Medawar and Willmer (1941) found that proflavine is toxic to fibroblasts in tissue culture, Russell and Falconer (1941) and Manifold (1941) have shown that neutral solutions of proflavine are less toxic than sulphonamides to brain tissue The recent experience of Mitchell and Buttle (1942) has also shown that large quantities of proflavine can be inserted in wounds with good results In the doses we have used we have seen no injurious effects in mice In clinical practice, however, large doses of proflavine should be neutralised immediately before application because much of the irritant effects of this drug are due to its high acidity Much of the criticism that has been directed against the use of the acridine drugs in wound infections has been based on previous experience with acriflavine which is much more toxic than proflavine and should not therefore discourage further trials of proflavine in wound therapy As Garrod (1940) has pointed out, proflavine is also much more easily prepared and of more regular composition than acriflavine, which is a mixture of compounds, so that proflavine is the drug of choice at the moment We have experiments in hand on the effects of the new acridines described by Albert and others (1938) and Rubbo, Albert and Maxwell (1942) in clostridial infections

The therapeutic action of penicillin on *Cl septique* infection in mice was investigated by Chain and others (1940) In an infection which killed all untreated mice within 24 hours they were able to save all mice receiving repeated injections of penicillin In our experiments the injection in the infected site of a single dose within 2 hours of infection was sufficient to save a high proportion of mice subjected to a severe infection Compared with proflavine and the sulphonamides it appears to be the most powerful of the therapeutic substances that we have yet tested experimentally against this type of infection It is also noteworthy that, judging by the statement of Florey and Jennings (1942) that 20 mg of therapeutic penicillin containing 40–50 units per mg caused serious embarrassment but not death in a mouse, the effective dose in our experiments is only about a 20th to a 30th of the toxic dose The great therapeutic power and the low toxicity of penicillin seem to warrant extensive clinical trial when enough of this substance becomes available

Gramicidin, another naturally occurring antibacterial substance, provides a striking contrast to penicillin In spite of its great activity in vitro against *Cl welchii* it has proved in our hands to be of little value against *Cl welchii* infection in mice It has also the great disadvantage of being highly toxic

The various substances that we have tested fall into two distinct groups In the first are the oxidising chemicals, zinc peroxide and hyperol, which appear to possess only an antiseptic action, because when their application to the infected site is delayed they fail to exercise preventive action In the second group are the sulphonamides, proflavine and penicillin, which can be given after an hour's delay and still prevent infection to a large extent The latter may be said to have selective chemotherapeutic action in that they can reach and exert their bacteriostatic effects on organisms that have invaded the tissues When the infection becomes generalised the curative action of the local application of these substances is much reduced and with the exception of proflavine and penicillin is ineffective

SUMMARY

The local application of zinc peroxide is apparently of no value in preventing the development of *Cl welchii* infection in mice when the organisms have invaded the tissues

Proflavine is of greater value than sulphanilamide and is at least as good as sulphathiazole in the local prophylaxis and treatment of *Cl welchii* infection in and its use therefore as a wound dressing should further explored

Penicillin, injected at the site of infection hours of infection, is a powerful prophylactic *Cl welchii* infection in mice and is superior to and the sulphonamides in this respect

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CONTROL OF PULMONARY TUBERCULOSIS IN MENTAL HOSPITALS

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THE report of the Medical Research Council's committee on tuberculosis in war-time[1] and Trail's comprehensive study[2] have dealt adequately with tuberculosis in the general population The committee have also investigated the present situation in mental hospitals, but as far as we are aware no figures based on research in these hospitals exist We present here the results of such research on a small community of male psychotics, and suggest a method for the control of tuberculosis in this type of community—a method owing its inception entirely to the economic exigencies of the moment

In May, 1941, it became obvious that the mortality-rate from pulmonary tubercle, particularly in the male population of this hospital, was rapidly increasing Looking up our records, we find that deaths from this disease from 1932 to 1941 were as follows

1932	*1933*	*1934*	*1935*	*1936*	*1937*	*1938*	*1939*	*1940*	*1941*
7	7	9	5	6	8	10	11	15	27

During these years the male population of the hospital remained stationary at about 1100

In the MRC report we find that mental hospitals have had, at least since 1910, the reputation of eclipsing the mortality-rate in the general population Thus in peace-time the rate was 9 or 10 times that of the general population and rose to more than twice its peace-time rate in 1918 Now, the rate has again risen steeply, to a greater extent in the males than in females Measures advocated for early diagnosis—chiefly mass miniature radiography—are now well known and have already, to some extent, been put into practice among the general public This method, to some extent and in due course, will doubtless be put into operation in mental hospitals The questions we must ask are to what extent, and in what period of time ?

It now seems certain that X-ray facilities will be made available to all mental hospitals, but not apparently in the form of mass miniature radiography To quote from the report—" the Committee therefore recommends that efforts should be made, so far as possible, to take periodical chest radiographs of all residents, whether they have symptoms or not, in order to discover and treat early cases Many hospitals already have X-ray apparatus suitable to this purpose " In other words some hospitals will still be committed to taking full sized X-ray photographs In our own case we viewed the expense of this programme in 1100 patients (or, including females, over 2000) with dismay, and we think that this

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1 *Spec Rep Ser med Res Coun , Lond* No 246, 1942
2 Trail, R R *Lancet*, 1942, ii, 413

SUMMARY OF FINDINGS

—	Junior school A						Junior school B						Senior school					
	Number			Per cent			Number			Per cent			Number			Per cent		
	Total	B	G	Total	B	G	Total	B	G	Total	B	G	Total	B	G	Total	B	G
No examined	149	78	71	100	100	100	156	75	81	100	100	100	191	92	99	100	100	100
Conjunctival findings—																		
Group 1	75	27	48	50	35	68	89	44	45	57	59	56	75	19	56	39	21	57
Group 2	27	22	5	18	28	7	25	10	15	16	13	19	52	38	14	27	41	14
Group 3	25	17	8	17	22	11	27	10	17	17	13	21	39	24	15	20	26	15
Group 4	13	8	5	9	10	7	14	10	4	9	13	5	15	5	10	8	5	10
Group 5	9	4	5	6	5	7	1	1	0	1	1	0	10	6	4	5	7	4
Corneal vascularity	2	2	0	1·5	3	0	2	1	1	1 5	1	1	15	5	10	8	5	10

B and G = Boys and girls

In addition to these changes in the epithelium, we have noted 17 children in whom a thickening or cystic change is present in the deeper layers of the conjunctiva This was usually observed near the plica semilunaris and it was apparently not associated with either sex or age

SLIT-LAMP MICROSCOPY AS A MEANS OF DETECTING DIETARY DEFICIENCY

Corneal vascularity—By taking, as we have done, actual invasion of the cornea as the criterion of abnormality, we may have failed to include some cases of mild ariboflavinosis Some of the children with a high degree of vascularity confined to the limbus were probably instances of this sort But only a therapeutic test would prove this and this we have not done Invasion of the cornea itself by capillaries from the limbus is more likely to be of definite dietary origin, and by considering only children showing this we think we are dealing with cases of real deficiency

Conjunctival findings—The rôle of vitamin A in the production of the conjunctival changes is obscure It is agreed that severe deficiency of vitamin A leads to keratinisation of the conjunctival epithelium a condition variously referred to as xerophthalmia, keratinisation or xerosis conjunctivæ There is usually generalised or localised opacity of the conjunctiva due to metaplasia of the epithelium The localised lesions when severe, consist of dry raised chalky-white "foam-like" plaques; these constitute the "Bitot spots" The epithelial changes may extend to the cornea, and if severe enough may lead to the dryness and ulceration referred to as keratomalacia

Kruse maintains that, in examining a number of individuals with the slit-lamp, he can grade them in a continuous series ranging from those with perfectly normal, transparent conjunctivæ to those having characteristic Bitot spots As intermediate grades, he recognises first a translucency then an opacity in one or more zones, and he claims that the changes represent various stages in the development of xerophthalmia due to deficiency of vitamin A. In other words, according to Kruse, examination of the eye by the slit-lamp may be used for the detection of early signs of deficiency of this vitamin. In fact, Wiehl and Kruse (1941) in the survey already mentioned definitely class subjects with these conjunctival findings as showing avitaminosis A Several considerations however indicate that the relationship between these lesions and vitamin A is by no means so definite We have already pointed out that changes induced in deficiency of vitamin A are known to affect the conjunctival epithelium, but the changes reported by Kruse, unlike those we describe, are in the subepithelial layers of the conjunctiva While the present report was being prepared, a paper has appeared by Berliner (1942) which strongly criticises the conclusions of Kruse for this and other reasons Berliner's chief arguments are as follows

1 The majority of the "spots" described by Kruse are almost certainly pingueculæ, in which the changes in the conjunctiva are not in the epithelium, where deficiency of vitamin A shows itself, but in the subepithelial layer

2 Most of the subjects with positive slit lamp findings have normal levels of vitamin A in the blood

3 The changes are more common in the higher age-groups

Berliner considers that most of the changes are normal presenile or senile alterations and are not prexerosis, xerosis or Bitot spots due to deficiency of vitamin A None of our children had conjunctival opacities as described by Kruse but we have seen just such opacities in adults, our experience leads us to conclusions similar to those of Berliner On the other hand, certain of Berliner's arguments are not so devastating as at first appears The level of vitamin A in the blood at least in adults, is not a sufficient criterion of vitamin-A nutrition, poor dark-adaptation which can be cured by the vitamin often coexists with quite high levels of vitamin A in the blood (S Yudkin 1941) Moreover, the fact that the conjunctival findings are more frequent in older subjects does not necessarily mean that they are normal findings due solely to age, it is possible that they are due to prolonged mild deficiency of the vitamin, so that they would naturally be more often seen in the higher age-groups It is clear that the question of the relationship between the conjunctival changes of Kruse and vitamin-A *deficiency must still be regarded as open*

Probably the most serious objection to Kruse's view is the fact that the changes he describes are in the subepithelial layers of the conjunctiva For this reason we feel that any early signs of vitamin-A deficiency will more likely be shown in studies such as ours which are concerned with epithelial findings, although at this stage we certainly do not claim that any one of the findings we describe is in fact an index of deficiency of vitamin A Further work is clearly necessary We are now examining the effect of prolonged vitamin therapy on these children and this may help to demonstrate whether vitamin A plays a part in the production of the epithelial changes

The opacities in the subepithelial layers of the conjunctiva which the American workers have described were not seen by us in children, but the epithelial findings in children which are reported here can also be distinguished in adults Moreover the epithelial findings in adults are in no way correlated with the presence or absence of opacity in the deeper layers We therefore suggest that, if other workers would also record their observations in the epithelium as well as in the deeper layers of the conjunctiva, it would probably help to hasten the elucidation of the cause of these changes

DISTRIBUTION OF FINDINGS IN DIFFERENT SCHOOLS

Corneal vascularisation—As we have said, the degree of vascularity which we have taken as abnormal is almost certainly due to riboflavin deficiency There are two possible reasons why more of the older children show this deficiency The first is that all the children have been subjected to a similar mild deficiency and the older children have consequently had a longer time in which to develop the signs Alternatively, it may be that the distribution of milk in schools, which has increased greatly in recent years, has meant that the younger children have had a more liberal supply of milk and hence of riboflavin than the older ones

Conjunctival epithelium—The interpretation of the differences between the schools in respect to the number of children showing positive epithelial findings is less more advanced stages these may anastomose and form arcades from which further streamers arise. Symptoms of lacrimation and photophobia are more noticeable than with the keratinisation; other changes due to ariboflavinosis, such as cheilosis and glossitis, are frequently present.

The only survey so far reported in which these slit-lamp examinations have been made is one by Wiehl and Kruse (1941) in New York. They examined some 500 high-school pupils of a low income level, 300 high-school pupils of a high income level and 140 adults employed by the WPA. The students were between 12 and 20 years of age, the adults between 17 and 65. Conjunctival changes (referred to by them as "avitaminosis A") was found in nearly 90% of the poorer children and nearly 100% of the workers (the conjunctivæ of the better class children were not examined). Corneal vascularisation was found in 2% of the wealthier children, 75% of the poorer children and about 40% of the workers.

During a nutritional survey of 1100 Cambridge schoolchildren carried out in January and February, 1942, 496 of the older children were examined by slit-lamp microscopy. We record our results at the present early stage not because we have discovered the cause of the findings we describe, nor even because we are able to define what is normal and what abnormal, but because the use of the slit-lamp for nutritional surveys is very recent and a description of the common types of findings may help in the adoption of a uniform classification and nomenclature.

The children examined were from three elementary schools—two junior and one senior school. Junior school A was in a poor district of the town; junior school B and the senior school were situated close together in a fairly well-to-do part of the town. The children examined at the junior schools were between 8 and 10 years of age; those in the senior school were all 11 years old. About equal numbers of boys and girls were examined.

RESULTS

Corneal vascularity.—Our observations in regard to the increased vascularity at the limbus, ascribed to early ariboflavinosis, resembled the changes described by the American workers. We have, however, classed as positive findings only those degrees of vascularity in which there is actual invasion of the clear cornea. In children showing these changes the limbic plexus showed congestion and proliferation, and capillary streamers arising from it extended centripetally beyond the corneoscleral junction. This invasion when present was always seen round the entire margin of the corneoscleral junction and there was never any appreciable difference in degree of vascularity between the right and the left eye. By taking as abnormal only those eyes in which blood-vessels invade the clear cornea we have adopted a somewhat severer criterion of abnormality than Sydenstricker and his co-workers. These observers class, as an earlier stage of abnormality, a proliferation and engorgement of the limbic plexus; invasion of the cornea, in their view, is a later stage of the same pathological process. Thus, by our taking as abnormal only the latter findings, it is likely that we have included only cases of true ariboflavinosis. This is supported by the observation (J. H. K.) that changes similar in type and extent may be seen in adults, and riboflavin in these cases induces obliteration of the capillaries, while there was no sign of any other possible cause for vascularisation. Altogether, 19 children were found with corneal vascularity (see table). The proportion was significantly higher in the older children—1·5% of the children at the junior schools compared with 8% of those at the senior school. The difference in incidence between boys and girls was not significant.[1]

Conjunctival epithelium.—Kruse's description of the changes in the superficial and the deep layers of the conjunctiva refers to adults and adolescents and we have seen in adults also conditions closely resembling those Kruse described. In the children, on the other hand, the conjunctiva was altogether more transparent and it was impossible to follow the classification adopted by Kruse (see discussion). Moreover, we felt it of greater importance to concentrate on the epithelial changes rather than those of the subconjunctival tissue, since it is in the epithelium that vitamin-A deficiency is known to show itself. For these reasons, we have adopt different classification for our findings. Five have been differentiated, as follows:

Group 1.—Smooth, transparent conjunctival epithel

Group 2.—Transparent epithelium with wrinkling, usually located midway between the limbus an caruncle or external canthus, or nearer to the limbus wrinkles form networks of various shapes, but those n the limbus are often arranged concentrically to it. Ther no opacities or thickening of the subconjunctival tissue

Group 3.—The wrinkling is more pronounced. Here there, mostly on the top of the wrinkles, are seen fine p reflecting the light, which do not disappear when viewed different angles. No opacities in the conjunctiva are vis

Group 4.—The points of reflection seen in grade 3 appe have aggregated, forming small islands with a definite opacity. At the edges of these opaque islands are seen p of reflected light resembling those in group 3. The opac are of various shapes, most often round or oval. They are dead-white or milky colour and are not raised above surrounding tissue.

Group 5.—The opaque areas are larger than in group 4 without points of reflection at their edges.

Let us say at once that the differences between groups are very slight and it may be thought that we making an unnecessarily fine division. Yet experienced no difficulty in distinguishing the gr in most of the children, and at this early stage knowledge concerning these changes we think it better to err on the side of over-differentiation rather than class together slightly different findings which may eventually be shown to be due to quite different causes.

We have intentionally referred in our classification to groups rather than grades since we do not at present stress the claim that they represent a continuous series of increasing amount of change. It is however likely that in fact they represent such a series. First, although it is usually not difficult to determine into which group a child should be placed, it is possible to range the children, beginning with some in group 1 and ending with some in group 5, in such a way that the differences between successive children are very slight indeed. Secondly, the distribution of the children among the five groups suggests that the groups represent grades of change in a continuous series. Thirdly, in all but 30 of the 496 children examined, the two eyes showed findings characteristic of the same group. Of the 30 in which this did not obtain, the difference in 22 was only of one group and in the remaining 8 of two troups.

Our findings are summarised in the table. After statistical analysis[1] the facts which emerge are these. Considering the boys and girls together, there is no difference between the two junior schools, but children from each of the junior schools show fewer positive findings (i.e., groups 2–5) than those in the senior school. Boys show fewest positive findings in junior school B, more in junior school A, and most in the senior school; among the girls there is no such difference between the schools. In junior school A and in the senior school, a smaller proportion of the boys than of the girls are in group 1, but this sex difference does not show itself in junior school B.

We do not know the ultimate cause of the conditions we have described and it is possible that many factors are involved, but our results suggest that three of the factors which play a part in producing these conditions are age, sex and economic status. Between the ages of 8 and 11 years, it seems, age and economic status affect the conjunctivæ of boys but not of girls. By the age of 11, the conjunctival changes in children of a good economic status are seen more frequently in boys than in girls, although at the age of 8 this difference does not exist. In children of a lower economic status the difference between boys and girls shows itself at age 8

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[1] The comparison between two sets of children—i.e., boys with girls or one school with another—has been made by comparing the proportions with positive findings in the two cases. A difference between two sets of children is taken as significant if the difference in these proportions is greater than twice its standard error—i.e., the difference would arise by chance once in twenty times or less often. For example, to test the significance of the difference in conjunctival findings in junior school A with those in the senior school we have compared the proportions 74/149 and 116/191. Analysis shows that the difference in these proportions is 2·1 its standard error and hence is significant.

THE LANCET

LONDON SATURDAY, DECEMBER 26, 1942

TETANUS IN WAR-TIME

TETANUS, like gas gangrene, requires a particular set of circumstances for its occurrence It needs, firstly, a manured soil, for the causal organism and its resistant spores live in and are shed from the intestine of many animals Thus, *Clostridium tetani* was found in 27% of 193 samples of soil from the European battle zones in the 1914–18 war[1], it was present in 57 out of 79 samples from the cultivated fields of England, but not at all from the "wilds of Scotland"[2], and now, in our opening pages, BOYD and MACLENNAN admit recovering it from only 8 8% of 91 samples collected between Daba and Benghazi during the present campaign in the Middle East The second requirement is a wound which will encourage germination of the spore and toxin-production by the tetanus bacillus Such are usually deep penetrating wounds with much necrosis of tissue or the presence of foreign bodies, and the rarity of tetanus after civilian accidents in peace-time is probably related more to the nature of the injury than to the absence of the infecting organism Occasionally, however, tetanus develops after apparently trivial and surface wounds Sepsis, and particularly the toxins of other anaerobes, also facilitates the onset of tetanus The third requisite is the bringing together of the infective material (soil or soiled clothing or other foreign body) and the necrotic tissue plus a time-interval to allow germination and toxin-production These three conditions are frequently fulfilled in war-wounds, whether suffered on the battlefield or in the bombed town, and prophylactic measures against tetanus therefore become of prime importance in war-time

Tetanus has apparently been uncommon among air-raid casualties in this country There are two possible explanations (1) Most cases are quickly dealt with surgically, and surgical removal of necrotic tissue or foreign body still plays an essential part in the prophylaxis of tetanus as of gas gangrene, (2) tetanus antitoxin was given prophylactically to most of the air raid casualties Yet cases of tetanus have occurred in spite of a prophylactic dose of antitoxin, e g, RADLEY SMITH[3] reported 7 cases of tetanus with 3 deaths among civilian casualties during a two-year period in one London sector 6 of them had been given one prophylactic dose of tetanus antitoxin During the same period, SMITH saw no case of tetanus among a much larger series of Service casualties, many of them evacuated from Dunkirk Indeed, BENSTED[4] records only 8 cases of tetanus after the episode on the Western Front, all of them in soldiers not actively immunised As large-scale active immunisation has not been practised among the civil population, and as one dose of prophylactic antitoxin may not protect against tetanus, the instructions regarding the use of tetanus antitoxin for air-raid casualties have been amended (E M S Gen/33 and E M S I 351) so that every injured person, however trivial the wound, is to be given an initial dose of 3000 units of antitoxin when first seen at F A P or hospital, with two further weekly injections if the individual has not been actively immunised If the injury is severe, the doses should be increased two or threefold

Active immunisation with tetanus toxoid is now a routine procedure in the Services, and, though a voluntary measure, the rarity of reactions means that some 95% of recruits accept it Two doses of toxoid at an interval of 6 or more weeks produce an antitoxin response above the 0 01 unit per c cm which is regarded as the basal immunity level, but in a proportion of cases the titre falls below this level after some months[5] A third dose of toxoid is therefore given 6–12 months after the primary inoculation, and this third dose "boosts" the antitoxin content to remarkably high levels (2–50 units per c cm) although the response may not occur until after 5 days[6] Because of this lag-period and because a few individuals may fail to respond at all, it is a regulation in the British Forces that every man shall be given a prophylactic dose of tetanus antitoxin at the time of wounding These precautions are not always carried out, and even when they are, tetanus may rarely supervene as BOYD and MACLENNAN have shown in their Middle East series of 18 cases, 5 of them among immunised troops, giving an incidence of 0 13 per 1000 wounded, and 13 among non-immunised men, giving an estimated incidence of 1 6 per 1000 That the risk of contracting tetanus was not inconsiderable is suggested by the finding of 18 toxigenic strains of *Cl tetani* in 214 wounds of a severe type Incidentally, it was perhaps more than a happy chance that a bacteriological expert on the plectridia (the terminal-sporing anaerobes) was available to differentiate the wheat from the chaff, for plectridia are commonly found in war-wounds, and their isolation and identification is no mean task

Interest in this series of cases attaches principally to the occurrence of tetanus in men who had been actively immunised In one patient, who recovered, there was only hearsay evidence about the infection The other non-fatal case was a Maori who had been given two doses of toxoid a year previously and who developed a mild tetanus 13 days after a bullet-wound of the forearm Of the three fatal cases, the first, an Indian, developed signs of tetanus 6 weeks after a cut in his hand, and he died 5 days later with a ruptured pulmonic cusp The development of tetanus in this case can only be explained on the ground that the patient was non-immunisable The other two cases fall into a different category In both there was extensive necrosis of tissue, without much frank sepsis, so that the tetanus bacillus was left undisturbed to manufacture its potent toxin In the one, who had been immunised 20 months previously, symptoms developed in 5 days and the patient died 36 hours later In the other, who had been given a boosting dose of toxoid three months earlier, the onset was delayed until the 9th day, but the large amount of toxin apparently swamped what should have been a more than adequate immunity More radical surgery at the time of wounding would have probably saved both lives In neither case was prophylactic antitoxin given, which raises the question "Would prophylactic antitoxin have prevented the onset of tetanus?" Opinion is still divided about the advisability of giving easy, since, unlike the corneal vascularity, we have not been able to decide on their cause, nor even to define limits of normality All we can say is that, if in two schools there is a significantly different distribution of the children among the five groups of epithelial findings, the factors concerned in their production must be present to a different extent in these schools. We can then state definitely that, whatever the causes of the positive findings in the epithelium which we here describe, they exist to a greater extent in the poor class junior school than in the better class junior school Our results indicate that the epithelial findings are associated with age, economic status and sex, being commoner in the poorer class school compared with the better class school, in boys rather than girls, and in older rather than younger children But until further data are available it would be speculative to do more than record these differences

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CORRELATION OF SLIT-LAMP FINDINGS WITH OTHER FACTORS

The examination of the eyes of these children by slit-lamp was part of a more exhaustive survey. Among other tests carried out were clinical examination, especially for signs of dietary deficiency, examination of the fundus oculi and measurement of visual acuity, examination of the teeth, measurements of height and weight, estimation of hæmoglobin, estimation of grip with a hand dynamometer, measurement of intelligence and of educational attainment A record is also being kept by the teachers of general behaviour and performance in schools and of absences and illnesses These results are now being analysed with a view to determining possible correlations between the various measurements We can already say that the slit-lamp findings, both conjunctival and limbal, are not correlated with height and weight (or Tuxford's height-weight index), hæmoglobin, dark-adaptation, intelligence or educational attainment

SUMMARY

An examination with the slit-lamp microscope has been made of the eyes of 496 elementary-school children in Cambridge, aged between 8 and 11 years

Corneal vascularisation, taken as an actual invasion of the clear cornea with vessels from the limbus, and said to be indicative of deficiency of riboflavin, has been found in about 4% of the children The proportion was significantly higher in older than in younger children

The importance of examining the epithelial layer of the conjunctiva is stressed Reasons are given for supposing that this is more likely to show changes due to dietary deficiency, especially deficiency of vitamin A, than examination of the subepithelial tissues according to the method of Kruse and his co-workers Opacities in these subepithelial tissues have not been observed in the children examined by us

Our observations have led us to classify the various findings in the epithelium into 5 groups The first contains those children whose conjunctival epithelium is perfectly smooth and transparent, while the other groups contain those showing varying degrees of wrinkling and opacity It is suggested tentatively that these represent 5 grades of increasing severity of change

The factors which appear to affect the production of these epithelial changes are age, economic status and sex Thus, children with smooth transparent conjunctival epithelium (group 1) are less common at the higher ages, in the poorer school, and amongst boys rather than girls It must be emphasised however that we do not know the cause of these epithelial changes, in particular, we do not claim at this stage that they are due to deficiency of vitamin A

We wish to record our gratitude to the teachers of the Cambridge schools, without whose cooperation this work would have been impossible

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Reviews of Books

Annual Review of Physiology

(Vol IV) Editors J M Luck, V E Hall Stanfo University, California American Physiological Society and Annual Reviews Inc Pp 709 $5

An article in an annual review may range from a thinly disguised card-index to a mature and critical appreciation of new conceptions The former is too technical for anyone but the expert, and of little interest to him because he knows all about it already, nevertheless, it is a useful record, and changing authorship makes such surveys stimulating The present volume has used them to advantage, but also contains a high proportion of the more mature type of article General physiology is as usual well represented (permeability, effects of neutron rays, genetics, development, growth) and distinguished workers have contributed to the six articles bearing on neurology, electrophysiology and physiological psychology Subjects often neglected, such as water metabolism, the skin, applied physiology and drug addiction are clearly handled, and metabolism is well represented Reproduction, the kidney, the digestive system and the blood each receive a section, and there are two chapters on the circulation The wide perspective embraced by Peters and Shannon in their respective fields of water metabolism and the kidney, Ruch's tabloid explanatory method of dealing with the technical field of reflex action, and Long's careful arrangement of material on endocrines and metabolism are examples of skill in presentation especially worthy of note, though the same qualities appear in other articles Inevitably the authorship becomes more North American, but it is hoped that after the war the editors will enhance the value of their series by periodically introducing foreign points of view

Management of the Sick Infant and Child

(6th ed) Langley Porter, MD, William E Carter, MD London Henry Kimpton Pp 977 57*s* 6*d*

Since it first appeared ten years ago "Porter and Carter" has won justifiable popularity among English speaking pædiatricians This extensively revised sixth edition comes four years after the last In the preface many colleagues of the University of California Medical School and elsewhere are mentioned who have helped in the process of revision, especially the sections on allergy, blood and its disorders and in various parts of the book where the use of new sulphonamides is discussed Nearly a third of the new volume deals with therapeutic and diagnostic procedures, dietetic details and drugs This product of the California school is of a high standard

Illustrations of Surgical Treatment

(2nd ed) Eric L Farquharson, MD Edin, FRCSE, major RAMC, formerly clinical tutor and temporary assistant surgeon, Edinburgh Royal Infirmary Edinburgh E and S Livingstone Pp 391 25*s*

Mr Farquharson fills in some of the gaps left in most surgical textbooks, showing in detail how recommended procedures, apart from surgical operations, are most easily carried out Minor surgery demands attention to detail, and these careful descriptions with photographs should enable even the novice to apply the methods correctly The expert too will find much of value, for the book also contains many useful hints from a man who is obviously mechanically-minded The first section deals with intravenous infusion therapy, describing the most recent methods and substances employed The second gives useful tips on the application of mechanical and plaster-of-paris splints for various fractures and deformities, well illustrated by photographs He shows the Thomas wrench being used by the handle, some prefer to see it used as Thomas himself taught, with the operator's hands protecting the part, and his body-weight used as the correcting force The book ends with a series of plates showing surgical instruments; these have been well chosen and their uses are given in notes This section will prove valuable to candidates for surgical examinations who nowadays have little time to hang about the instrument rooms, process will be awaited with interest by all radiologists If the method is simple and gives constant results, this is an important contribution not only to cineradiography but also to mass radiography

MORPHIA AFTER INJURIES

UNTIL lately it was the practice to prescribe morphia for shock as if it was some specific remedy The larger the wound or the greater the shock the larger was the dose thought necessary And the doctor felt satisfied that whatever arguments there might be about the other methods of treating shock morphia in full doses had the blessing of the textbooks and experts Gradually during this war there has emerged the view that not only is morphia often unnecessary after injuries but there are definite dangers from its excessive use The *Army Medical Department Bulletin* for October says that morphia is given to many wounded patients who would do better with a cup of tea It also reminds the medical officer that the ideal is to give the smallest dose that will be effective, and that, though gr $\frac{1}{2}$ is reasonable for the severe injury with much pain and distress, after this dose no more should be given for at least four hours In the shocked patient poor absorption may lead to disappointing results from subcutaneous morphia and the intramuscular route is preferable If rapid relief is required, gr $\frac{1}{6}$–$\frac{1}{4}$, but never more, diluted to at least 1 c cm with sterile water, may be injected intravenously, taking a minute or more over the injection Intravenous morphia can often be given by injecting it through the rubber tubing (cleaned as if it were skin) of the plasma or blood drip that the patient is having; the ready made sterile solutions such as 'Omnopon' or 'Alopon,' which remain stable in solution, are convenient for this purpose When injection is impracticable one or two gr $\frac{1}{4}$ tablets work well if placed under the tongue The pharmacology of this practice is still doubtful With morphia, which is not acted on by gastric juice, it does not matter much whether absorption takes place through the buccal mucous membrane or lower down, but it would be worth while settling this question once and for all by some properly controlled experiments

In shock, the fall of blood volume reduces the transport available to carry oxygen to the tissues, and the aim must be to supply the needs of the vital centres by restricting the oxygen consumption of the less important tissues, such as the voluntary muscles Morphia does this by allaying the restlessness, due to pain, hæmorrhage or anxiety, and by damping down cell metabolism The use of morphia thus appears to be sound rational therapy But morphia also depresses the respiratory centre, so that breathing becomes both shallow and slow, and the consequent reduction in oxygen intake will add to the difficulties of the vital centres The shallow breathing also reduces the efficiency of the respiratory suction pump, so that the venous return is slowed There are other effects to be remembered With the low blood-pressure of shock the additional use of morphia may lead to cessation of urinary secretion The patient after large doses of morphia is almost poikilothermic, and has to be carefully guarded against changes of temperature Nevertheless, GRANT[1] has never seen bad results from gr $\frac{1}{4}$, and he says that when injured patients are in pain their low blood-pressure will rise to normal levels as the pain is eased by the drug He reminds us, however, that repeated injections may lead later to massive absorption as the circulation recovers and that chloral and bromides should not be forgotten NOSWORTHY[2] finds that by giving scopolamine with a much smaller dose of morphia the respiratory depressive effect of morphia can be avoided The neurosurgeon insists on the minimal amount of morphia for head injuries—certainly not more than gr $\frac{1}{4}$ The restlessness associated with head injury is better controlled by raising and padding the sides of the bed, and ROWBOTHAM[3] recommends phenobarbital gr 3 intravenously followed by chloral hydrate and bromides by mouth or rectum The chest surgeon finds that large doses of morphia postoperatively, after a chest injury, lead to lung collapse, within limits, the more these patients are made to move and not "mollycoddled," as PRICE THOMAS puts it, the better Thus the practice of using morphia as a routine postoperatively, for every injury, and for shock or suspected shock, needs checking Pain, and restlessness due to anxiety or hæmorrhage are the true indications

AUSCULTATION UP TO DATE

IN what he calls by the rather cumbersome name of a phono electrocardioscope, G E Donovan has introduced an instrument which holds out high promise of useful service to the clinician and medical student, as well as to the research worker As he described it in a lecture to the Institution of Electrical Engineers, the instrument incorporates a double-beam cathode-ray oscilloscope with a fluorescent screen of long afterglow, which permits of the simultaneous direct visual recording of two phenomena such as the phonocardiogram and electrocardiogram, the phonocardiogram and sphygmogram, or the electrocardiogram and sphygmogram At the same time the heart sounds, picked up by a special microphone, can be heard through an electrical amplifying stethoscope or a loud-speaker The instrument seems reasonably simple to work, and it is claimed that it is robust, cannot be damaged by overloading or shock, and that maintenance is simple A further advantage is that permanent photographic records can be obtained of the phonocardiogram, electrocardiogram or sphygmogram By means of frequency filters, murmurs or desired sounds can be accentuated and undesirable ones muted The instrument has an overall frequency range extending from the lowest frequency to over 1000 cycles per second, but this band can be divided by means of filters so that the frequency response of the apparatus can be given any desired slope, as is done by the "tone control" of a wireless set The most obvious application of the phono-electrocardioscope is in the teaching of auscultation Donovan says that the amplifying of heart sounds through a loud-speaker can never be 100% satisfactory, he much prefers multiple headphones, which can, of course, be used with his instrument It seems to be possible with this instrument for a group of students to hear (and see) the sounds actually produced by the heart, including those not audible to the human ear with the ordinary stethoscope, as well as the sounds and murmurs, reasonably amplified, which he should be able to hear with the simple stethoscope At the same time they will have visible evidence of the correlation of these sounds with the various phases of the cardiac cycle as demonstrated by the electrocardiogram Of the usefulness of the instrument in the clinic and the research laboratory there can also be little doubt antitoxin to an actively immunised and wounded soldier The American and Canadian Forces follow Ramon and give an additional dose of toxoid at the time of wounding, and as all American troops are given a boosting dose before entering a theatre of war, the antibody content should ordinarily be sufficient to deal with a tetanus infection without passive protection There still remains the rare non-immunisable individual, but it is obvious from the experience so far gained in this war that active immunisation, complemented always by early and efficient surgery, is a pretty sure safeguard against tetanus

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MOVING X-RAY PICTURES

Cineradiography has been the dream of radiologists since 1896, when both rontgen rays and the cinematograph were in their infancy, but despite many ingenious inventions the method has not yet reached the stage where it can be applied to routine clinical work There are two possible ways of making a radiographic moving picture The first and most difficult is the so-called direct method where a long strip of X-ray film or a series of single films is moved in front of a selected part of the body and exposed in the ordinary way at predetermined intervals This method is costly and needs complicated apparatus, and the interval between exposures is too long In the second or indirect method successive photographs are taken of the image on the fluorescent screen Since the light value of a fluorescing screen is very low the problems of this method of cineradiography resolved themselves into securing a wide-aperture lens of suitable focal length, increasing the luminosity of the screen, and increasing the sensitivity of the film The optical problem has been solved by the development of the Zeiss R-Biotar *f* 1 0 85 lens Unfortunately increasing the luminosity of the screen or the sensitivity of the film results in loss of detail, because the former necessitates the use of a broad focus tube and the latter the use of coarse grain film Workers in different countries have approached these difficulties along different lines In England Russell Reynolds[1] increased the luminosity of the screen by increasing the output of the X-ray tube This entailed overloading a broad focus tube and exceeding the tolerance dose of X rays to the patient But Reynolds introduced a circuit breaker which automatically cut off the X rays as the shutter in the cine-camera closed He thus eliminated danger to the patient and was able to use a less broad focus tube with fine grain film Even then his maximum speed for cardiac work was only 25 frames per second, he was limited to a field of fixed size and the patient had to be in the erect position Stewart, Hoffman and Chiselin[2] in America, Torelli[3] in Italy and Kawaishi[4] in Japan used the same lens as Reynolds but employed a fine focus rotating anode tube with exposures well within the tube limits and the skin tolerance dose, and compensated for the low light value by using ultra-sensitive coarse grain film The larger the grain of the film emulsion the less the detail, so what was gained by the fine focus tube was lost by the coarse grain film Like Reynolds these workers had to use a field of fixed size in one position

Lately de Castro and Jany[5] of Brazil claim to have devised a camera attachment which overcomes the outstanding difficulties and a method of hypersensitising fine grain film which enormously increases its speed without corresponding loss of detail The apparatus consists of an expanding leather bellows, light tight and damp proof The large end of the bellows is hermetically closed by a fluorescent screen At the small end is a lead-lined case holding the cine-camera The bellows is supported on a tubular telescopic structure which allows the bellows to be expanded from 50 cm to 2 meters in length The telescopic support has a metric scale on which the distance between the camera and the screen can be quickly measured By turning the helicoidal thread on the lens to the corresponding distance on the external tube, the camera is automatically focused The sides of the lead-lined camera box are hinged so that there is free access for winding the camera and regulating the speed An electromagnet attached to the rear wall of the camera box allows the operator to start or stop the film from a distant control table This apparatus is attached to a standard motor-driven tilting table The exact method of attachment is not described but it is said that it can be put together or dismantled in a few minutes The device maintains the tube, the patient, the centre of the screen and the optical axis of the camera in perfect alignment The camera can be moved nearer to or further from the patient during the exposure and the tube can also be moved backwards and forwards during the exposure Lateral and rotary movements of the tube are also possible and remote control of the motor which drives the couch permits of the patient being moved from the erect to the Trendelenburg position during the exposure All the operations are carried out in daylight and the whole apparatus can easily be adapted for seriography, tomography and mass radiography

The Brazilian workers—radiologist and engineer—came to the conclusion that the only way to obtain adequate speed and detail was by increasing the sensitivity of fine grain film Hypersensitisation of film was attempted by Daguerre and film manufacturers have been experimenting with it ever since The principle consists in exposing the film to substances such as ammonia or mercury vapour shortly before it is used Up to the present no way has been found of accurately controlling this process Jany now claims to have done so but does not describe his technique He combines the action of mercury vapour with "several amalgams," and says that the hypersensitising should be done "in a glass jar, hermetically sealed and maintained at a constant temperature during a certain period, depending on the composition of the ingredients which constitute the photographic emulsion" With hypersensitised fine grain film and the apparatus described, the Brazilians claim to make cineradiograms safely and easily with detail nearly as good as full size film By hypersensitising coarse grain fast film they claim to take slow motion pictures of the heart at 64 frames a second Details of the hypersensitising capable of acute observation, and perhaps on such a foundation it will not be difficult to build a faith in the modern prophylactic immunisation for the growing number of diseases for which it is advised Plague, for instance, is no small problem in the Union, and Grasset has already placed the preparation of live avirulent plague vaccine on a routine basis He uses both the Tjiwidej strain from Java and the EV strain from Madagascar, these two avirulent strains of *Pasteurella pestis*, used in the living state, have acquired great reputations He has also developed combined immunisation against the typhoid group and tetanus Several cases of tetanus have arisen in men working in one particular mine shaft, soil from this mine was found to contain spores of *Clostridium tetani*, though samples of water were negative, investigations are in progress

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[5] de Castro, J M and Jany, J *Rev paul Tisiol* 1942, 8 110

Cancer has occupied the attention of Dr M J A Des Ligneris, to help in the discovery of predisposing factors he suggests that every member of the community should be provided with a detailed clinical history-sheet, forming a complete record from birth till death, this would help to elucidate not only the problem of cancer but that of many other conditions too, as practitioners in Britain will agree

FATIGUE FRACTURE OF THE TIBIA

A CONDITION in the tibia analogous to march fracture of the metatarsal bones has been found in X-ray examinations of children and adolescents complaining of pain around the upper end of the tibia or in the calf, and Hartley[1] has drawn attention to it as a potential cause of disability in young recruits Not only may a fatigue fracture of the tibia seriously interfere with training, and especially with marching, but when it is undetected slight violence may produce a complete fracture and long disablement In one such case observed by Hartley the subsequent fracture has led to the soldier's discharge Altogether he records 14 cases of fatigue fracture, in all of which the lesion was at the upper end of the shaft of the tibia, the site varying with the age of the patient from 1½ to 3¾ in below the epiphysial line The clinical history is usually of pain on standing, on walking, or after walking, with no history of injury The pain disappears when the limb is at rest Bilateral cases have been noted, but the pain has not been present simultaneously in both legs In 5 patients slight swelling was detected on the inner aspect of the upper end of the tibial shaft There was no local reddening or pyrexia, and tenderness was present only in 3 instances The patients came for radiographic examination 10–21 days after the onset of symptoms If the limb is rested completely spontaneous cure is certain, it occurred in every one of Hartley's cases The diagnosis rests entirely on the X-ray findings A small area of callus is seen in the lateral view behind the cortex at the upper end of the tibial shaft, in the anteroposterior radiogram callus is usually visible on the medial aspect of the tibia, but sometimes on the lateral aspect A tiny nick is also seen in the cortex of the bone, medially, laterally or both Later pictures will show an area of osteoporosis extending forwards from the posterior area of callus, sometimes with a fine irregular line of dense bone, the width of a hair, in its centre Rest increases the callus and causes sclerosis of rarefied bone In the healed fracture the posterior callus may have become organised into a bony buttress The radiological appearances may be definite within a fortnight of the onset of pain, but if uncertainty exists the examination should be repeated after another 7–14 days, absence of the typical appearances then is definite evidence against the diagnosis If a true fracture takes place at this particular site in the tibia, especially from slight violence, the radiogram should be carefully examined for callus If this can be demonstrated in a fresh fracture it must have occurred through an are weakened by fatigue fracture In Hartley's opinion th fatigue fracture is essentially a fatigue dystroph unassociated with inflammation or with direct violenc He regards the upper end of the tibia as subject t considerable strain, a fact which he thinks is demonstrate by the architectural structure and buttressing seen i normal radiograms Faulty crystalline structure, abno mal strain, or a combination of both at this vulnerabl site causes the bone to give way Hartley urges th importance of diagnosing fatigue fracture early in youn patients, so that treatment by immobilisation can b begun before time has been wasted and the patien exposed to the danger of a severe fracture

RABBIT DISEASES

THE Ministry of Agriculture, in two succinct bulletins, has summarised what the vast new body of rabbi keepers should know about the feeding and diseases o rabbits, and Gordon[2] has given more details about the diseases In the control of disease much depends o good husbandry, newly purchased stock must alway be isolated, hutches kept clean and manure never placed o ground that will be used to grow rabbit food The individua is usually sacrificed to prevent the spread of disease t other animals, unless there is some effective specifi treatment affected animals should be destroyed an burned, and thorough disinfection of the hutches carrie out Tuberculosis, most commonly from the bovin strain and acquired through infected cow's milk, affect rabbits, but does not as a rule assume epidemic propor tions Pseudo-tuberculosis, caused by *Pasteurella pseudo tuberculosis rodentium*, is an infectious disease closel resembling tuberculosis both clinically and pathologically and is usually fatal after a 3–4 weeks course of progres sive emaciation and weakness Snuffles, or contagiou catarrh, can be one of the most serious diseases in rabbitries, it can be acute but is more often chronic, and would pass for a persistent cold except for th accompanying wasting The cause is not established *Fusiformis necrophorus* infection (Schmorl's disease produces necrosis and ulceration of the skin, particularl of the face and head, and thickly walled abscesses i different parts of the body Affected animals move the jaws with difficulty and may develop pleurisy and pneumonia A condition in which a large abscess due to streptococcal infection develops in the region of the lower jaw is termed strangles The abscess should be opened and careful hygienic precautions observed Hæmorrhagic septicæmia is caused by *Pasteurella cuniculicida*, animals die within 24–36 hours and exhibit the usual symptoms and post-mortem lesions of an acute septicæmia Vent disease (rabbit syphilis), a venereal disease caused by *Treponema cuniculi*, is common in the rabbit but is less serious than human syphilis, affected animals have small scaly sores on the genital organs and when these are observed mating should be prevented The disease responds to the local application of mercurial ointments or the injection of neosalvarsan, it is not transmissible to man. Coccidiosis affects rabbits in two forms—the hepatic, caused by *Eimeria stiedæ*, and the intestinal, caused by *E perforans* Many adult rabbits are carriers In the most acute case—of the type which kills 70–100% of a litter—death occurs suddenly with no previous ill health and often no post-mortem lesions, although oöcysts can be demonstrated in liver preparations In less acute cases diarrhœa is usually followed by coma or convulsions immediately before death Adults develop progressive emaciation, pot-belly, and weakness of the hind legs. Multiple white nodules are found in the liver or intestine,

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[1] Hartley, J B *Brit J Surg* 1942, 30, 9

[1] Modern Rabbit Keeping Bulletin No 50 of the Ministry of Agriculture HMSO 1s Some Diseases of Rabbits Bulletin No 14 of the Ministry of Agriculture HMSO 3*d*

[2] Gordon, R F *Vet J* 1942, 98 152

Annotations

DEATHS IN THE THEATRE

Few statistical inquiries are less satisfactory than those which seek to establish the relative safety of different anæsthetics If it were possible for identical anæsthetists to give different anæsthetics in measured dosage to identical subjects undergoing identical operations by identical surgeons comparisons might be just, but it is not Three Johns Hopkins workers,[1] in an analysis of deaths in the theatre, lay little stress on this kind of comparison, though they do give percentage mortalities for the various anæsthetics used, actually these were not significantly different Lyford and his colleagues were anxious to determine the incidence of anæsthetic deaths and to see whether some of them might have been avoided They reviewed the records of 51,392 patients who had been given general or spinal anæsthetics for any surgical procedure except ophthalmic and obstetric operations during the ten years 1931–41 In this series there were 75 deaths in the theatre, an incidence of 1 5 per 1000 anæsthetics, of these, 55 were not, and 20 seemed to be, related to the anæsthetic Of the deaths thought to be unrelated to anæsthesia, 29 took place during difficult craniotomies, all the patients were in danger from increased intracranial pressure at the time of operation, and some died from hæmorrhage A further 16 patients died during chest operations, many of them being critically ill at the time Of the remaining 10 patients in this group, 6 seem to have died because of their poor condition at the time of operation, and 2 from operative hæmorrhage and shock during extensive surgical measures, one death was associated with absorption of an excess of adrenaline used in an attempt to control bleeding in a frontal sinus operation, the case-history of the last patient in this group was not available for study Of the 20 deaths which seemed to be related to the anæsthetic, obstruction of the main respiratory passages was held responsible in 4 cases In 3 this was by regurgitated stomach contents In the fourth, a hæmophiliac, an intranasal catheter was passed with the patient under ‘ Pentothal Sodium ’, it was thought to have reached the trachea, though it may have stopped short in the pharynx, 15 minutes later the patient showed signs of asphyxia and shortly afterwards died of œdema of the larynx Another 3 deaths were associated with spinal anæsthesia In 3 more the technique of administration of an inhaled anæsthetic seems to have been at fault, one was a patient with hypertension and a history of angina pectoris who was given nitrous oxide and oxygen followed by a small amount of ether for appendicectomy He died about 15 minutes after the start of anæsthesia and may have been short of oxygen throughout In the second case there was an inaccuracy in the flow-meter of the closed nitrous-oxide circuit which resulted in him getting 20% less oxygen than was supposed In the third case the patient responded badly to the anæsthetic (nitrous oxide and oxygen followed by ether), he might have survived if operation had been delayed until a satisfactory anæsthetic state had been achieved Another patient was receiving nitrous oxide, oxygen and ether for incision of a carbuncle, a cautery was used to check bleeding when in some way the anæsthetist received an electric shock through the patient and dropped the mask The anæsthetic mixture thereupon exploded and killed the patient In the remaining 9 cases no adequate explanation of the deaths could be found, though the poor condition of the patients was thought to be contributory in 4 The conclusion is that 11 deaths in the series could have been avoided—the 4 due to obstruction of the air-passages, the 1 due to explosion, the 3 due to faulty technique and the 3 due to spinal anæsthetics The gross anæsthetic mortality in the series was 0 039%, which is in line with rates reported by other observers

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[1] Lyford J , Berger O L and Shumacker, H B *Bull Johns Hopk Hosp* 1942, 70, 488

RESEARCH IN SOUTH AFRICA

The South African Institute for Medical Research has a reputation for work of distinction, in the report for 1941 the brief account given by Prof E H Cluver indicates that the standard does not fall The institute has turned its attention to war problems, Dr J H S Gear, whose work on typhus is well known, has been appointed to supervise the preparation of yellow fever vaccine after tuition in New York by members of the International Division of the Rockefeller Foundation Yellow fever exercises the African health authorities especially since its recent extension to the Sudan and Uganda, that the Union is within the sphere of possible spread is shown by the finding of the common vector, *Aedes ægypti*, at many points in the Transvaal, Natal and Cape Province But the existing records of this mosquito have been made principally in malarious country where mosquito collecting has been carried on, its actual range is certainly greater than present information indicates Malaria, of course, exists in the Union, Dr B De Meillon, who has wide entomological experience in the Union and Mozambique, has studied the properties of mosquito-repelling mixtures for use by the South African Forces Citronella is effective, but coumarin also shows great possibilities In an extensive trial, Dr E Grasset and Dr A R Davison, like workers elsewhere, have failed to confirm the good results reported by Collier in Thailand on the treatment of leprosy with diphtheria toxoid Pneumonia is a subject which the institute has long studied intensively because of the heavy incidence and high death rate in the past among native mine workers of the Rand Dr D Ordman has continued the bacteriological investigations initiated some 20 years ago, and it is on the basis of these, which display the shifting ætiology of the condition, that the wide system of prophylactic immunisation is based Sulphonamide therapy is of course largely used, but cases resistant to sulphapyridine are still cropping up, most of them are associated with *Staphylococcus aureus*, either as the sole infecting agent, or together with pneumococci or other organisms During 1941 the commonest pneumococci found in pneumonia were of types 1 and 2 Routine examination of lungs for silicosis and tuberculosis is made for the Miners' Phthisis Medical Bureau, the numbers submitted were slightly higher than in the 2 preceding years Ordman has undertaken the preparation, on a large scale, of vaccines against typhus of the classical louse borne type, murine typhus, and tick bite fever (a tick-borne member of the typhus group) Immunisation may prove a more effective means of controlling these diseases than any other, in the meantime the value of the vaccines has not fully been investigated in man, though that against the tick borne form may give satisfactory results if it is as potent as the Rocky Mountain fever vaccine

Ordman's activities included the investigation of an outbreak of relapsing fever, a disease first reported from the Union in 1912 by Park Ross, there were no further records until 1932, since when cases have been found in the northern Transvaal In the 1939 report de Meillon recorded it in the high veldt of the Transvaal, where it was associated with the presence of *Ornithodorus moubata*, the common vector of tropical Africa Ordman[1] finds that the spread of *O moubata* may in part be attributed to the fact that men of the Angoni tribe of Nyasaland, when travelling away from their own country, take with them a supply of these ticks, believing that immunity from relapsing fever can only be maintained if they are bitten by the ticks from time to time The African is

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[1] *S Afr med J* 1941, 15, 383

SINUSITIS AND THE COMMON COLD

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THE differential diagnosis of the conditions included under the term "common cold" is still vague and the treatment adopted is therefore apt to be uncertain in its direction. There is a particular tendency to overlook the part played by sinus infection in producing the symptoms.

Wynn (1942) divides common colds into two groups. The first, primary colds, are due to a virus infection and were found by Dochez, Mills and Kneeland (1936, 1938) to be unaccompanied by rise of temperature. The second group, secondary colds, are due to infection with the usual catarrhal bacteria which have become established in the tonsils, sinuses, nasopharynx, &c. after primary colds. The secondary colds are those mostly seen in practice because the primary ones are soon over. Jackson and Coates (1930) say that the attempt to differentiate between a sinusitis and an acute coryza or rhinitis "is more or less of a sophistry, the severe cold being called a sinusitis and the mild one a coryza." St Clair Thomson and Negus (1937) say that acute sinusitis "forms a part of many acute catarrhs which invade the sinuses by direct extension from a nasal catarrh."

The typical symptoms of sinusitis of course vary according to which sinus or sinuses are affected; many attacks produce no more than a "cold." In the chronic condition there is little tendency to spontaneous recovery. Among the symptoms of chronic sinusitis given in the textbooks are catarrh, nasal obstruction, chronic cold in the head, a discharge sometimes so slight that patients have unconsciously swallowed it for years, headaches, acute and chronic laryngitis, asthma, bronchiectasis, lack of power to concentrate, lassitude and even mental abnormalities. Ross Faulkner (in Jackson and Coates's textbook) writes: "Many a person has gone through life as a chronic invalid labelled a neurasthenic or hypochondriac, from an unrecognised pus focus in the nasal sinuses."

SIXTY CASES OF COMMON COLD

Study of 60 cases of common cold seen in private practice yielded some suggestive results. In this series, 39 patients had only occasional heavy colds or attacks called influenza; in 7 of these a definite diagnosis of sinusitis had been made at some time by the accepted methods. The remaining 21 patients had frequent or chronic heavy colds, and of this group a diagnosis of sinusitis had been made in 6. Only 3 of the diagnosed cases of sinusitis had had operations performed for this condition.

The patients in the "occasional" group all showed one or more of the following symptoms: chronic postnasal catarrh; frontal, occipital or one-sided headache; sneezing attacks; nasal discharge worse on one side and more copious either on standing up or lying down; tenderness over a maxillary or frontal sinus; pain in a sinus when the patient attempts to breathe in with the nose or mouth closed; slight swelling over a sinus; mild fever; lassitude and aching of limbs; minor facial neuralgia.

Cultures from the nasal discharge of patients with recurrent colds have shown more or less normal flora (usually *Staphylococcus albus* and diphtheroids) when taken between attacks but have yielded a heavy, pure or almost pure culture of a bacterium when taken during an attack. Organisms found in order of frequency have been: *Pneumococcus*, *Staph. aureus*, *Streptococcus viridans* of different types, and Pfeiffer's bacillus. The same organism was recovered in pure culture during separate attacks of a severe cold at intervals of many months from the same patient; in one case a *Pneumococcus*, type II, and in another Pfeiffer's bacillus. Two patients, both doctors, when examined by an ear, nose and throat specialist and radiographed during a clinical attack, proved to have had a long-standing chronic sinus infection which had never been suspected; they claimed to have been free from colds for years. In several cases giving a history and symptoms strongly suggestive of recurring sinusitis, X-ray examination showed no evidence of sinus infection.

In a case diagnosed as frontal sinusitis a mixed culture was obtained before and after one acute attack. A pure growth of *Staph. aureus* was recovered during the attack. Towards the end of this attack a slight diarrhœa was noticed; culture of stool yielded *Bacterium coli* and *Staph. aureus* in roughly equal numbers. As it happened a stool culture had been taken shortly before the acute sinusitis and had shown no staphylococci, and they were also absent from specimens taken after the attack.

Two patients, a husband and wife, had the wife's sister staying with them. The sister (who is not included in this series of cases and who had previously suffered from a "frontal sinusitis") developed a cold: a pure culture of *Pneumococci* was obtained from the nasal discharge. Within two weeks the husband and wife also developed colds; cultures from one yielded pure Pfeiffer's bacillus and from the other pure *Pneumococci*. The husband had on two previous occasions, 7 and 16 months before, yielded pure cultures of Pfeiffer's bacillus from his nasal discharge during a cold.

DISCUSSION

Some say that it does not really matter if a disease that resembles influenza is called influenza, acute sinusitis or something else. It might almost as well be said that it does not matter whether typhoid fever is called typhus or smallpox called chickenpox. If sinusitis passes as influenza the chances of curing an early attack, checking the spread of infection and of avoiding chronicity and possibly serious complications are much reduced.

Crooks and Signy (1936), Carmack (1931) and Mollison and Kendall (1922) as a result of routine antrum puncture in children have reported infection in these cavities in 22–30%. Ebbs (1938), as the result of post-mortem examinations on children, reported sinus disease in 30·6%. During childhood the frontal and ethmoid sinuses are only being developed and are less liable to obstruction than the adult sinus. Sinusitis is therefore probably much commoner in children and adults than is generally recognised. The diagnosis of acute and severe sinusitis is not difficult. After recovery from the acute attack X rays may show a clear sinus; this is not proof that no latent infection remains. A negative X-ray picture is evidence only of the absence of an empyema or of gross mucosal changes. The diagnosis of sphenoidal sinus infection is not so easy and its importance in relation to mental disease has been emphasised by Pickworth (1934) who brought evidence to show that infection may remain latent for years in the mucosa and even in the bone.

SUMMARY

Infections of the accessory nasal sinuses are prevalent in childhood as well as in adult life, and are often diagnosed as recurrent colds.

Case-histories and bacteriological findings suggest that apart from unmistakable cases of sinusitis, many are only mild and others have exacerbations of a chronic latent infection with possibly long quiescent periods; and that primary mild sinusitis may remain as a latent infection.

The possibility of sinusitis should be seriously considered and the sinuses investigated in any case of pyrexia of unknown origin, influenza or febrile catarrh.

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CORRIGENDUM.—On page 418 of the article by Mitchell and Buttle (Oct. 10), for "Anderson (1940) found that 1/10,000 solution . . ." read "Stephenson (1940) found that 1/1000 solution . . ." The corresponding reference should read: "Stephenson, D. (1940) Personal communication."

and the bile-ducts may be seen as irregular white streaks on the surface of the liver The oöcysts which are passed with the fæces in both forms of the disease, and can be demonstrated microscopically, are not infective until at least two days after being passed In prevention, therefore, animals kept in runs should be moved on to clean grass every two days Food and water must be kept clean, and wire-floored hutches are useful All members of an affected litter should be killed, the bedding and droppings burnt, and the hutch scrubbed with 4% washing soda and then disinfected with a 10% solution of household ammonia Recently a disease, clinically rather similar to acute coccidiosis, has been prevalent in young rabbits Usually the rabbit is simply found dead, but there may be a few hours paralysis or convulsions before death It may be caused by a virus, but its ætiology is still being investigated at the Ministry of Agriculture Veterinary Laboratory, Weybridge Control measures as for coccidiosis should be carried out Rabbits are liable to favus and ringworm, the appearances and treatment being as in man Skin mange, produced by two kinds of mite, is particularly infectious and only valuable animals should be treated Ear mange or canker, also due to two mites, and leading to a violent otitis externa, may be treated with hydrogen peroxide to remove scabs, followed by a mixture of olive oil 20 parts and cresol or carbolic acid 1 part Benzyl benzoate preparations would probably be more effective Internal parasites of the rabbit are not important but the bladder-worm stage of the dog tapeworm *Cœnurus serialis* may cause subcutaneous swelling The cyst can be surgically removed and then destroyed

DIURESIS AND LACTATION

It has been the fashion to regard the initiation of lactation in terms of an antagonism between œstrogen and prolactin, or perhaps it would be preferable to say of a balanced endocrine relationship between the ovary and anterior pituitary This view, which carries the implication that sufficiently high doses of œstrogen exert an inhibitory effect on lactation, has been questioned by Meites and Turner[1] principally on the basis of their finding that the prolactin content of the anterior pituitary is not decreased but increased as a result of œstrogen administration This increase they look upon as indicative of an increased production of prolactin, which is taken to be a decisive factor in the initiation of lactation This contention, however, rests on the premise that prolactin is the specific lactogen hormone, a view which was severely criticised by Folley and Young[2] and which Turner[3] himself has lately seemed compelled to abandon Assuming that what may be called the œstrogen anterior pituitary antagonism theory is true, deficiency in lactation can be conceived, in many cases, as being due to a disturbance in the ovary-pituitary balance in the direction of a predominance of œstrogen Hypogalactia could then be treated in one of two ways—by administering anterior pituitary extracts or by measures which decrease the concentration of circulating œstrogen Hitherto the former method has been used almost exclusively, with varying and often disappointing results This is hardly surprising when it is remembered that purified preparations of prolactin (the pigeon crop gland stimulating factor) have been used in these trials and that Folley and Young[2] have pointed out that prolactin is only one of a complex of anterior lobe factors concerned in the initiation and maintenance of lactation Moreover, pituitary therapy, always expensive, has owing to war conditions become virtually impossible in many European countries Hence Geisendorf and Neyroud[4] of Geneva have been led to treat cases of deficient lactation by trying to hasten the post partum fall in the level of circulating œstrogen by the administration of the diuretic theophylline, the resulting increase in urine flow, they say, causing a rapid elimination of œstrogen from the body At first one ampoule containing 0 48 g of theophylline ethylenediamine was injected intramuscularly within two hours of parturition, but as these injections were painful the later cases received two 0 36 g suppositories during the twelve hours after parturition Their results in a large series, while possibly not fulfilling the exacting requirements of the modern statistician, are suggestive of success Clinicians who view with alarm the present decline in breast-feeding, and whose hopes of endocrinology providing them with a panacea for lactational deficiencies have hitherto been disappointed, might give the method a trial If the Swiss results are confirmed the position of the œstrogen inhibition theory will be strengthened

ARTERIAL LIGATURE FOR DUODENAL ULCER

The general poverty of the few foodstuffs available in Southern India are such that no treatment involving special diet over a long period is feasible Food there means rice and curry or tapioca and curry Working in this area, Somervell[5] therefore operates on the vast majority of duodenal ulcers, and in the last 20 years has done 2000 such operations He looks on the fractional test-meal in these cases as the most valuable guide to operative procedure and divides the acid curves in duodenal ulcer into four types—(1) high acid, (2) moderately high fasting acid rising to a high level in two hours, (3) very high fasting acid rising but *slowly after* the meal, and (4) high normal acid For the fourth type he advises gastroenterostomy alone, but in the others he now combines it with ligation of gastric arteries—" a kind of physiological gastrectomy, designed to reduce acidity promptly " Under procaine infiltration of the abdominal wall, reinforced if necessary by splanchnic anæsthesia, he begins on the greater curvature about two inches from the pylorus and proceeds to tie four out of every five arteries that he comes across until a point high up on the curve is reached The same process is then carried out on the lesser curvature Finally, through a window in the mesocolon he delivers as much of the stomach as possible and ties off four fifths of the greater curvature arteries on the posterior aspect which have not been tied already, and all the lesser curvature arteries which, without distressing the patient, can be persuaded to appear at the hole in the mesocolon A posterior gastroenterostomy is then performed Somervell remarks on the peculiar facts that the stomach can be deprived of enough of its blood-supply to put oxyntic cells out of action without interfering with its other functions, and that the cells so treated will fail to secrete acid for at least 2½ years The test-meal charts he publishes show a great and immediate reduction in acidity after this operation Thus in 10 cases before operation the total acidity of the fasting juice was 79, the average acidity throughout two hours was 70 and the maximum acidity during the two hours 94, three weeks after operation these figures had fallen to 52, 45 and 64, a year later they had fallen further to 29, 39 and 61 Ligature, in Somervell's experience, produces a more rapid fall in acidity than gastroenterostomy alone, though the late reduction is much the same, he is therefore more fortunate than most in reducing acidity with gastroenterostomy alone In 2 out of 3 cases in which ligature alone has been done a satisfactory fall in acidity was obtained He has so far ligatured the vessels in 150 cases, with no mortality, and is very satisfied with the results on top of un and won't let un git up, so the chap ketches 'old o' varther's arm in 'is teeth and bites a lump out's clean as a whip My varther takes 'old of 'is nawse and starts to twist un "Hif you bites me agin, you b——," 'e says, "I'll screw your bliddy nawse right orf, sure 'nough!" My brother thinks 'tis 'bout time vor to vetch the Sergeant and orf e goes arter un When they two comes back 'bout quarter'n hour later varther is still sitting atop this vur chap and 'im a man only 'arf 'is age, mind you Then, top of ivverything, varther goes and summonses un vor assault!

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Great men have their biographers, great virtues a-recording, but today I mourn for one who was not known as great, yet seemed above all others to have the gift of friendliness When he first came to our camp he was a grubby little boy of ten—might he camp with us? Got a tent? No Got any grub? No-o He stayed six weeks, going from one troop to another, acting as guide in the woods and fields, showing town boys the skill of cooking the cockle, of spearing the dab and the flounder, of seeking the samphire One heard his shrill Doric all day, and like a cluster of sparrows he and his friends moved in a babble of noise, at night reluctantly desisting He came year after year and was greeted as one whom we had never really left In winter we would sometimes hear from him, hard fabricated letters, scented with the smell of hayfields and a summer's sea With foreign scouts his glowing friendliness made him at ease and soon he might have been of their own blood At the camp just before the war he was seventeen and working, but he came each evening helping in chores, and left soon after dawn He tried to join the Navy, but was found to be colour-blind, so went into the Merchant Service Here too his easy friendliness made him as one who had been known to each for all time On his second trip his ship was torpedoed homeward bound on a winter's night He was still alive when they dragged him into a boat, but died an hour later and was buried at Stornaway Throughout his few years he had nothing to offer but life and friendship, but he gave them both and they were gold His was a genius for aiding, the spirit sung by Kropotkin, which has done more for the advance of man then the skill of craftsmen, the wisdom of statesmen, or the beneficence of kings O Jimmy, may the reminding cries of the gulls and the sound of northern breakers and the love of many friends bear you peace

* * *

Today has in a small way been rather a red-letter day for me I have just given Sam his last pink certificate, for he has now reached the age of 65 Seven years ago he and I decided, rightly I think, that, owing to a combination of chronic bronchitis and osteo-arthritis, he had better give up the blacksmithing Every lunar month since I have called on him and stated, on the pink certificate provided for the purpose, that, in my opinion, he was not likely to be fit for work for a further period of 4 weeks I have made 182 ticks on his medical record card If my arithmetic is correct, I have written Sam's full name and disabilities and my signature 91 times each and the figure 4 182 times I am not prepared to work out the acreage of paper consumed, but it is nice to think that my laudable reiteration has at last carried conviction

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"I'll bring my bitch along this afternoon, if I may," said my shooting companion, "she's useful though she may be a bit wild" She proved to be a young golden Labrador of great beauty but obviously very pregnant and not at all wild "She's a primigravida How far on would you guess she is?" asked my friend "Nearing full term I should imagine," said I, and the keeper hazarded the opinion that she wouldn't go much more'n a week. She hunted rather sedately and, walking homeward, we noticed a bag of membranes presenting She appeared to be in no distress but squalled at intervals whenever she had a good pain We spread a sack on the back seat of the car, made her comfortable and went into the keeper's cottage for tea Twenty minutes later we found she had had two pups, and a third was born as we drove home All are doing well

Public Health

Annual Reports

METROPOLITAN BOROUGHS

The population of the metropolitan boroughs has been shrinking for many years due in the main to emigration from the metropolis to the outer ring This migration, mostly of young married people with their families, explains the apparent increase in insanity, especially of senile dementia, with which the county council has to deal The borough which has suffered the severest depletion is *Shoreditch* which at the end of the last century had a population of 122,000 In 1938 the population was 80,000, but during the war this has shrunk to less than half In the past the borough was densely overcrowded both per acre and per hereditament Infantile mortality which was close on 200 in 1899 sank steadily to 31 in 1939, but rose to 69 in 1940 and 63 in 1941 Tuberculosis notifications sank from 6 3 per 1000 population in the last war period to 1 2 in 1939 and the tuberculosis mortality from 3 0 in 1903–07 to 0 7 in 1938 There has been a brisk rise in the past two years In 1941 notifications were 3 0 and mortality 2 2 per 1000 population, but in view of the disturbance of the population, this apparently alarming increase must not be taken too seriously

In *Islington*, new cases of pulmonary tuberculosis in 1941 were 40% and of other tuberculosis 23% above the 1938 figures, while the mortality increased 67% and 55% respectively Whilst there is no doubt that tuberculosis did increase in 1940 and still further in 1941, local returns must be read with caution One obvious factor augmenting the local rates is the rejection from the services of recruits found to be tuberculous on call-up These are returned to the civil population, so the tuberculosis-rate of young men in the civil population is very high indeed So far as can be told at present there has been a substantial decline in tuberculosis in 1942

In *Hammersmith*, increase in tuberculosis in 1941 was slight Dr J B Howell, in his report for that year, mentions that the old tuberculosis dispensary was destroyed and the work transferred to the British Postgraduate Medical School where "the work has been carried on under much better conditions, and in my opinion the Dispensary is now in the place where it always should have been, where the Tuberculosis Officer has the advantages of all the ancillary services" In Hammersmith the birth-rate in 1941 was 16 5, the highest since 1928, when it was 16 6

In *Hackney*, on the other hand, the birth-rate dropped from 15 2 in 1940 to 13 7 in 1941 At the cleansing station 248 children under five were treated for scabies, 1058 children over five and 1618 adults, 120 people, all adults, were also cleansed of body lice

THE OUTER RING

The townships of the outer ring show the other side of the picture They are not self-contained populations but in large part dormitories for the metropolis They vary greatly in the composition of their populations and still more in the powers possessed by their ruling authorities On the whole, they have excess of young married couples in rather favourable circumstances who work in London but can afford to live outside the capital and travel to their work Their health records should therefore be good and in general they are, though they show considerable variations Their birth-rates are much lower than they should be to maintain their populations by natural increase Taking four at random, the birth-rates in 1941 were 12 86, 11 65, 13 31 and 12 42 The corresponding death-rates were 13 95, 11 2, 13 46 and 12 65 Infantile mortality is also uneven, varying from 21 8 in Finchley to 63 in Hornsey Maternal mortality was low in most, but not in all In Wembley it was 4 30, in Hornsey 3 24, in Leyton it was 0

Dr A G Morison of *Wembley* (where 21 out of 95 infant deaths were certified as premature birth) says, with truth, that prematurity is now the greatest single factor in human mortality and the most promising line for the immediate reduction of infantile mortality is in adequate facilities for treating premature infants In Chicago and New Zealand much success has been

In England Now

A Running Commentary by Peripatetic Correspondents

I HAVE eighty cases of home-sickness here, old men evacuated from London They sit on the beach and hear the clutter of streets, they gaze out over the North Sea and dream of the Hackney Road Clearly the disease is pretty common in our animal world, it has anchored the ancient civilisations of the ants and bees, it is the motive of the migrant and the homer, and territoriality is its mainspring, it occurs more strongly in the young and the old or when there is need of protection as in illness and at nightfall, in the virile it alternates with wanderlust which is its manic form, it is the call to the beast from the earth that bore it In essence nostalgia, this return-pain, consists in a longing for home expressed in mental tastes, touches, smells, sounds and pictures, the whole composite animal thought-form

Even in man, who is degenerate in these respects, home-sickness retains a large element of taste, smell and touch, whose proportions vary at different ages The very young child longs for a person, his mother or his nurse, and the order of precedence here would probably be *touch, taste (including a feeling of repletion)*, smell, hearing, sight—the "lower animal" sequence At prep-school-going age, if the composite thought-form were put in words, the items in order of prominence might be something like this the house itself and its protecting personality, the birds' egg collection, the smell of the kitchen and the feeling after a good illicit meal, the feeling of being in bed and hearing the rain on the ivy, my rabbits, the feel of the lawn to bare feet, my mother and father, the hole in the shrubbery which I am going to make into a real cave and the smell and the gloom of it, John's ferret, the acorns I planted in the field, my sisters Later on the sisters may move up and be bracketed with the ferret, and the parents may take precedence over the rabbit Later on still it tends to be more diffuse—a longing for particular towns and counties Going on the long route round the Cape in the last war I used to walk up and down the deck with a London addict and sometimes he used to pretend we were walking from, say, Westminster Bridge to the Mansion House, and he discoursed on the streets and houses we were supposedly passing Then I would remember that when I used really to walk those same streets I was dreaming of Essex fields and elms It often beats logic, it will make a child return on the first day of a holiday she has been saving up for and talking about for months, and it packs people back to bad homes and bombed areas I once knew a Lewis Islander who got a very good job in the middle of Queensland, but he chucked it up as he was getting ill—he told me he could hear the sea breaking even in the Ford Some exiles may tell you they never get home-sick now, then suddenly comes a smell of bracken or of peculiar dust associated with some squeaky chair or room, and they have to answer quickly, for it is *home calling on the old nasal line* One never quite gets over it, thank Heaven, for although it can be devastating at times, on the whole it is a poignantly pleasant disease, moreover it is the strength of families and adhesive of nations There is only one cure—to go home—and it is a solacing thought, quite in keeping with the morbidness of the disease, that we shall all be cured at the great homecoming, when we return to dust

* * *

The credit for the following important discoveries in the rapidly growing field of homunculology should really go to George, my friend in the Army One day in the mess, after a particularly wearying sick parade, he was brooding tensely on philosophical questions, to the accompaniment of a steady flow of gin and limes (or gins and lime), when the light broke in on him "Of course!" he exclaimed, making the Padre choke over his beer "It's obvious, when you think of it! The Old Woman Who Lived in a Shoe wasn't a myth at all—she really lived, and all those children she didn't know what to do about are the ancestors of the Little Men Who Live in Army Boots! Why they should prefer Army boots is incomprehensible, but they do Every man I saw this morning was firm in his statement that he had never suffered from the machinations of these fellows when he wore civilian footwear, but that now is a martyr to them" George stopped for breath, in the pause the Colonel was heard to remark coldly though not a doctor himself he had always [illegible] excessive consumption of alcohol in the early part of the day unhealthy

The Major, whose cardiovascular homunculi had in the past few minutes screwed down the safety-valve and opened the throttle wide, now gave tongue in his usual bluff military manner "Rubbish! Nonsense! You doctors are far too soft-hearted! Little Men, indeed! *It's all lead-swinging, in my opinion* Why, out in India we used to march 50 miles a day, and no sick parades! Regulars, of course Grand fellows! But of course the Army wasn't permeated with all this new fangled Air Force stuff in those days They tell me the Air Force is full of these Little Men ideas—Gremlins, they call them—petrol-drinking Gremlins, sight-twisting Gremlins, Gremlins that breathe on the wind-screen and put dirt in the guns, and so on! But what can you expect in a Service with no traditions?"

The Major continued in this strain for some time, but George was too full of his discovery and other things to take much notice *H vesiculogenicus*, little men with stirrup pumps who pump water into the skin and make blisters *H pesplanogenicus* (George's latin, never very reliable, was giving way under the strain), the heavy little men who jump up and down on the arch until they knock it flat *H* —— (George's latin had now failed completely), the little men with hammers who live upside down under the inner sole, and industriously drive nails up through it The bootlace-gnawers and knot saboteurs are well known, but *it is not fully* realised, even in the high scientific circles such as George and I revolve in, that march fractures only occur in metatarsals previously weakened by the inroads of little men with pneumatic drills As George learnedly points out, any damage to the surface of a structure subjected to bending *leads to a local stress concentration*, with resultant failure under less then design loads He also suggests that bone may be liable to vibration fatigue, like metals, but this is above me, I prefer the more democratic homuncular theory.

* * *

"Salvage" is a word screamed at me just now from every newspaper and many hoardings, and paper, it appears, is still one of the main articles to be salvaged It is easy to grasp the difficulties of obtaining wood pulp and the hindrances to its ultimate distribution, so when I try to buy a book and am told that it is out of print owing to paper shortage, or when I am informed that my copy of the *Blanktown Guardian* can no longer be supplied owing to limitation of copies, I am disappointed but not vexed, and try to bear these discomforts with fortitude However, the information given in a reputable weekly that the circulation of Hedley Chase's books represents a greater supply of paper than a large publishing house used *in all its publications for six months* does not help me in this effort Then in a bookshop I visited a few weeks ago there was an enormous display of copies of the most recent effort of a medical colleague now resident in California It seems that so many copies were printed, presumably on the author's reputation, and so few are being sold that there has to be a special drive to get rid of the surplus It is a pity that the applications of Salvage should be so anomalous

* * *

My varther, 'e's a man sem'ty six year old and 'e can take a team o' 'osses and do a day's ploughin' so well's inny-body now *Wan thin 'e can't bide* is to yur a man swearin' at a wumman, and you knaws, darter, as us got some *drudful* neighbours T'other day the man opposight comes 'ome to 'is dinner and starts orf swearin' and blindin' to 'is missis Hup gits my varther, goes across to un and cracks un wan on the jaw Then this yur chap—a man ony thirty-five year old, mind—pushes varther back agin the wall and starts for to pitch into un purty smart Varther, 'e puts 'is 'and back agin the drang-pipe so's to git a gude shove orf like and springs vorrard, takin' the chap roun' the neck and back and turns un over on 'is arse like wink Down goes varther rhaphy with a Curtis No 1 abdominal belt not a truss. It is worn for three to six months The rationale [illegible] to prevent the "pot-belly" sag of the lower abdomen which often occurs after operation, associated with an dragging discomfort and sometimes a "bearing-down" [illegible]. With the stretching of the lower abdomen comes [illegible] corresponding expansion of the internal and external [illegible] The belt prevents this It may not be possible fit soldiers with belts, probably the exercises described [illegible] Brigadier Edwards to restore the tone of the lower abdominal muscles—in other words, abdominal rehabilitation—will achieve it more effectively, but I should be reluctant to start it before three weeks

Harley Street, W 1 HAROLD DODD

PROTECTION AGAINST BEE-STINGS

SIR,—In an article on bee venom in 1933 (*Lancet*, ii, 446) I called attention to the fact that about 2% of all people are seriously upset by bee-stings, and in a much smaller percentage death occurs The only remedy after the sting is adrenaline hypodermically if in time, and since the average time between sting and death is about 12 minutes this time is short It is therefore necessary to find a preventive I had recently been attending a woman with massive urticaria—a common manifestation of bee-venom poisoning—and found calcium so effective and speedy in action that I decided to try it in prospective bee-keepers For three weeks before attempting to handle bees the person takes one 'Ostocalcium' tablet (Glaxo) 3 times a day, and thereafter one tablet a day until the bees have gone to bed for the winter It is well on the first occasion for handling bees to have a doctor present with syringe and adrenaline, and deliberately to incite a bee to sting So far I have seen no general reaction from the venom in 8 keepers so protected, but time will show whether this is more than chance

Nottingham FRANCIS THOMPSON

Obituary

IVOR LLOYD TUCKETT

M D CAMB

Ivor Lloyd Tuckett, who died in the Isle of Wight from enteric fever on Nov 28, came of Quaker stock, his father from Frenchay, his mother from Falmouth *nee* Fox Born in London in 1873, he was educated at Marlborough and at Trinity College, Cambridge, where he took a double first and headed the list in the natural sciences tripos On completing his clinical training at University College Hospital, London, he qualified in 1898, and in the examination for the MB Camb. he was 300 marks ahead of the next candidate and was congratulated by Rose Bradford, who said it was an honour to examine him. After serving as house-physician at UCH he returned to Cambridge, where he had been made a fellow of Trinity at the age of 21, a record at that time As an undergraduate he had worked at physiological laboratories in Germany, and he now settled down to several fruitful years of research on the functions of the pancreas in relation to diabetes, and the degeneration of nerve-fibres This brilliant pioneer work, published in the *Journal of Physiology*, led to his appointment as assistant Downing professor of physiology, but a promising career was interrupted in 1906 by a breakdown in health Forced to abandon research Tuckett spent the next three or four years travelling, mostly in New Zealand. On his return to England he retired to Hertfordshire and occupied himself with country pursuits, taking several prizes as a rose-grower Soon after the outbreak of the last war he became anxious to use his medical knowledge, and at the suggestion of his friend Percy Flemming he offered his services to Moorfields, which owing to the call up of younger men was in need of help, and after gaining experience he acted as house-surgeon there during the war years On leaving Moorfields he served for a time as house-surgeon at the Norfolk and Norwich hospital, and in 1923 he settled in the Isle of Wight where he lived until his death, carrying on an ophthalmic practice at Cowes and Newport In later years he was elected a fellow of University College

Ivor Tuckett was a man of wide interests, an omnivorous reader with sound critical faculty, an expert debater and keen conversationalist His boyish zest for life, sprightly sense of humour and unusual physical activity remained with him until his last illness Nature in all her aspects and the mysteries of the human mind were of absorbing interest to him, and he made an intensive study of psychology and was himself psychoanalysed His favourite hobby was yacht racing and of late years he kept a small yacht in the Solent Tuckett's passionate love of truth and hatred of shams and superstitions led him to examine the claims of spiritualists and mediums, the outcome of which was *The Evidence for the Supernatural* (1911) which has since been issued in a popular edition He became a member of the Rationalist Press Association, for whom he delivered the Moncure Conway lecture in 1920 on *Mysticism and the Way Out* He was always thinking of others and helping those in difficulties, financial or otherwise, and his friends will remember thoughtful acts of kindness without number.

He married Miss Anna Wikman, of Lund in Sweden and they had one son Major Cedric Tuckett FRCS, RAMC

R A G

GLADYS JULIA CUTHBERTSON RUSSELL

M B ST AND, D P H

Dr Gladys Russell, who died on Dec 7, was an able doctor, a wise administrator, whose service to maternity and child welfare was single-eyed and disinterested She was born in St Cyrus, a village on the East coast of Angus where her father was schoolmaster, and educated at Montrose Academy and at St Andrews University where she graduated in 1919 After holding house-appointments at Dundee Royal Infirmary she became resident medical officer at the Lonsdale Hospital, Barrow-in-Furness, and later at the Children's Hospital, Pendlebury, where her interest in children was awakened She therefore took the DPH at Manchester in 1924, and joined the staff of the Cheshire county council as assistant medical officer for maternity and child welfare Two and a half years later she moved to a similar post in Monmouthshire and in 1928 she went to Leeds where her promotion was rapid Soon after her appointment the post of senior medical officer in the maternity and child welfare department fell vacant and she was chosen to fill it

During her tenure of office there have been great changes The department has expanded in many directions and with each expansion her responsibilities were increased Among the greatest and most important of these developments were the proposals which formed the basis of the reorganisation of the midwifery service after the passing of the Midwives Act 1936 which were largely the product of her brain and they have stood the test of practical experience

Dr Russell was the first woman to hold the office of president in the Yorkshire branch of the Society of MOHs and she was also a prominent member of the Medical Women's Federation, while her interest in the education and training of health visitors made her a valuable member of the examining board of the Royal Sanitary Institute

JOHN PERCIVAL BROWN

M B MANC

Dr J P Brown, who died on Nov 30, was born at Bacup in 1878, and he and his father, the late Dr John Brown, between them held the position of medical officer of health of that town for fifty-four years John Percival was educated at Manchester Grammar School, and Victoria University, Manchester, where he qualified in 1900 After holding resident appointments in Manchester and Macclesfield, he joined his father in general practice, and the rest of his life was spent in the service of Bacup until owing to failing health he retired a year ago Dr Brown was a corps surgeon in the St John Ambulance Brigade, and in 1926 he was appointed an officer of the Order of St John. During the last war he did valuable Red Cross work Keenly interested in historical medicine and legal medicine, he rarely missed a meeting of the Manchester Medico-Legal Society He leaves his wife with two daughters and a son, Surgeon Lieutenant Douglas Brown, RN achieved by treating immature infants as cases of deficiency disease, whilst at the same time research is progressing into the cause of prematurity

Dr Caryl Thomas of *Harrow* calls attention to the rise of paratyphoid which during the war has been spread mainly by artificial cream, though many stray cases occur in which the source of infection cannot be traced The fatality of paratyphoid in the past three years has been extraordinarily low, largely due to better recognition of mild and abortive cases, but possibly also to the medium by which most cases are infected

In *Leyton* in 1892 the birth-rate was 35 and infantile mortality 141 In 1941 the birth-rate was 13 31 and the infantile mortality 38 3 The highest infantile mortality in the half century was 155 in 1899, the year in which this rate soared to a high record in all parts of Britain 1911 was the last year in which the rate in Leyton exceeded 100 (116 6) and 1926 the last in which it exceeded 60 (64 8)

In *Hendon* measles and whooping-cough were prevalent in 1941, the former causing 3 and the latter 6 deaths Notifiable pneumonia was also exceptionally prevalent

Infectious Disease in England and Wales

WEEK ENDED DEC 12

Notifications —The following cases of infectious disease were notified during the week smallpox, 1 (at Swinton, Yorks), scarlet fever, 2769, whooping-cough, 1326, diphtheria, 1079, paratyphoid, 7, typhoid, 10, measles (excluding rubella) 13,287, pneumonia (primary or influenzal), 989, puerperal pyrexia, 174, cerebrospinal fever, 75, poliomyelitis, 7, polio-encephalitis, 0, encephalitis lethargica, 3, dysentery, 133, ophthalmia neonatorum, 69 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Dec 2 was 1990, including scarlet fever 677, diphtheria, 258, measles, 304, whooping cough, 165, enteritis, 94, chicken pox, 75, erysipelas 37, mumps, 46 poliomyelitis, 2, dysentery, 14, cerebrospinal fever, 6 puerperal sepsis, 24, enteric fevers, 9, german measles, 1, encephalitis, 1

Deaths —In 126 great towns there were no deaths from scarlet fever, 2 (1) from enteric fevers, 14 (1) from measles, 5 (0) from whooping-cough, 21 (3) from diphtheria, 51 (5) from diarrhœa and enteritis under two years, and 42 (2) from influenza The figures in parentheses are those for London itself

The second fatal case of enteric fever was at Tynemouth Liverpool and Rhondda each reported 5 deaths from influenza, no other great town more than 3

The number of stillbirths notified during the week was 230 (corresponding to a rate of 38 per thousand total births), including 25 in London

FIFTH SUPPLEMENT TO THE BPC

THE latest supplement to the BPC 1934 (London Pharmaceutical Press, pp 38, 2*s* 6*d*) contains a full cumulative index to the changes made in this and the four previous supplements In part I monographs are added for prepared derris, with a new preparation, applicatio derridis BPC, and for lonchocarpus, both for the treatment of scabies The other changes in the monographs and formulæ are in preparations of which quinine is not regarded as an essential constituent Thus quinine is omitted from the formula and title of extractum malti liquidum cum quinina et strychnina, pilulæ ferri phosphatis cum quinina et strychnina, syrupus ferri bromidi cum quinina and cum quinina et strychnina, tabellæ ferri phosphatis cum quinina et strychnina Quinine also disappears from glycerinum hypophosphitum compositum, pilulæ ferri valerianatis compositæ, pilulæ podophyllini et quininæ, syrupus hypophosphitum compositus, syrupus triplex, tabellæ hypophosphitum compositæ, tabellæ phosphatum et hypophosphitum compositæ, and tinctura antiperiodica It will be news to many prescribers that all these preparations contained quinine In part II the only changes are verbal ones to allow synthetic rubber to be used in making surgical sheetings and plasters

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The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

Letters to the Editor

CEREBROSPINAL FEVER, 1914-17

SIR,—A statement by the Minister of Health on p 688 of the *Lancet* of Dec 5, that in the c of cerebrospinal fever of 1914–17 two out of three were fatal, needs qualification The figures are p 147 of vol I, Medical Services, *Official History of Great War* They were as follows Troops in United Kingdom cases 3549, deaths 1640, 46 2% Civilian population cases 5306, deaths fatality 65 4% Total cases 8855, deaths 51 fatality 57 7% The Minister's remarks therefore to the civilian population only, since the fatality am the troops, far from being two out of three, was less one in two

East Molesey MERVYN GORDON

YOUTH PROBLEMS AND MENTAL HEALTH

SIR,—Dr Mayer-Gross raises matters of vital importance to the community Referring to wanton destruction of property by youths, and irresponsible behaviour and spread of venereal disease by girls, he states that psychopathic, and morally and mentally defective, persons are largely responsible for these acts He also suggests that such persons could be treated and the offences prevented if an adequate mental health service existed

Fully staffed and well-equipped psychiatric and child-guidance clinics can assess the mental state of an offender, but relatively few of these cases are amenable to psychiatric treatment in an outpatient department In many areas there is a lack of diagnostic facilities, but a more serious omission is the lack of suitable residential care and treatment to meet the needs of the individual case when the diagnosis has been made and the necessary measures decided on The overlapping of the functions of the Board of Education, the Ministry of Health, the Home Office, the local authority and the voluntary organisation adds to the difficulty and reveals the urgent necessity for a Ministry of Childhood and Youth A further aggravation of the problem already existing among the juvenile population is arising from the discharge from the Forces of men and women who, by reason of mental defect and psychopathic disability, are found to be unamenable to psychiatric treatment and unfit to serve

Liverpool MURIEL BARTON HALL

INGUINAL HERNIA

SIR,—In reply to Brigadier Harold Edwards's interesting letter, my adoption of the Bassini operation has been gradual during the past eight years, performed at first reluctantly because it required a longer effort and greater attention to detail than the operation for hernia ordinarily practised in this country The average English textbook does not detail Bassini's operation His description, now 50 years ago, still compels my admiration I have never seen a recurrent hernia after it, and this after a faithful follow-up which includes patients who have recurred once, twice, and in one instance three times previously There are certain operations which I have found difficulty in accepting, but which experience has proved to meet patients' needs They include subtotal thyroidectomy for the toxic thyroid, subtotal gastrectomy for a peptic ulcer, the muscle-cutting incision for exposure of the kidney, and the precise operation of Bassini for the cure of inguinal hernia, which admittedly distorts the anatomy a little, but in my hands has consistently cured

I fully agree that the time in bed after operation is important In my practice it is 16 days for the fit young adult with the indirect hernia, 18 days for double indirect and for unilateral direct hernia, and 3 weeks for the double direct hernia Recent work on the time required for union of tendons confirms that these periods are right and in no way too long I believe that some recurrences can be explained by the resumption of too early function

Another point which may be important in the avoidance of recurrence is fitting every patient after ts'—Miss F Horsbrugh Deliveries of the which the Minister referred in his statement on not yet begun In the meantime progress has the detailed arrangements for its use as soon to hand, and the Minister hopes to issue in the a circular to local authorities regarding the of the tuberculosis service in all its aspects rs of the allocation of the miniature radio- Arrangements have been made to make available for tuberculosis and as regards the for this and other forms of work, the Minister National Service and the Minister of Health detailed plans with the organisations concerned tive arrangements for the financial assistance Minister referred in his statement and on which with interested organisations are nearly he hopes it will be possible to give the necessary local authorities in the near future

Equipment for Lifeboats

to a question the Parliamentary Secretary to the described the equipment which the Ministry rt requires shipowners to provide in lifeboats a minimum supply of approximately 3 quarts of person. This is about treble the prewar require- more must be provided as far as is practicable is afforded by canvas hoods and weather fitted in the boats and by protective suits which are to all members of the crews An approved first aid renewed with expert medical advice, must also be also one gallon of fish, animal or vegetable oil ved substance for massage The emergency person are as follows

of fresh water	14 oz. biscuits
late	14 oz. milk tablets
mican (or other approved meat extract)	

ARD'S HOSPITAL FUND FOR LONDON

g of the fund on Dec 15, the Duke of Gloucester, dent, announced that this year £28,000 is to be to hospitals This is rather less than in recent the distribution committee have taken into account bility that there will be heavy demands on the fund e war They have also set aside £5000 for grants to ls for the establishment of preliminary training schools irses The committee hope that these grants will ge the smaller hospitals to set up schools, perhaps as terprises

Minister of Health in moving a vote of thanks to the said that the moment was notable, for the Beveridge had made a provocative contribution to the recon- theme One feature of particular interest both to to the fund was its assumption that comprehensive rehabilitation services will ensure medical treat- everyone This, as he had announced in the House r, 1941, was indeed the Government's intention and part of the Government's policy to maintain the that patients should make a reasonable payment the cost of treatment "The Beveridge report," Mr tinued, "recognises that the question of patients' ions and of contributory schemes is one which can only in relation to the whole problem of the n of hospital services, and one which will depend ral policy found best for providing those services s too early yet for me to determine the shape of that am now conducting all the preliminary spade work later be consulting the interests most concerned) n be more alive than I to the value of the practical in the past, and being done now, by the various ry schemes and also to their potentialities for the rticularly if they are able to converge a little more re uniform paths, for example in their rates of to hospitals and in their readiness to extend those equally to any hospital, wherever situated, to medical needs of a patient make it desirable to send ou have, I know, been putting a good deal of useful the questions of contributory schemes in London better correlation of their activities You would, I well advised to go ahead with this—perhaps particu the two aspects which I have just instanced—and s will certainly be of interest to us, in considering which it may be found best to expect these schemes n any long term hospital policy"

A CONTRIBUTION TO THE MYTHOLOGY OF CANCER RESEARCH

E L Kennaway, MD, FRS

Thomas Henry Huxley, in a well-known essay, gave a destructive estimate of *The Value of Witness to the Miraculous* (why can no-one write now as he did, either in spirit or in style?) But scientific workers often have reason to doubt the value of witness to the non-miraculous also

ARSENIC CANCER IN HORSES

The literature of cancer research contains frequent references to an alleged piece of evidence for the carcinogenic action of arsenic recorded by Dr J A Paris, MD, FRS, late senior physician to the Westminster Hospital, in his book bearing the title, lengthy as was usual in those days, of

> PHARMACOLOGIA, comprehending the Art of Prescribing upon Fixed and Scientific Principles together with the History of Medicinal Substances

which reached its 3rd edition in 1820 and its 5th edition in 1822 Dr Paris says "The poisonous effects of arsenious acid are so amply detailed in medical works, that it would be superfluous to dwell upon them in this place, it may however be interesting and useful to record an account of the pernicious influence of arsenical fumes upon organized beings, as I have been enabled to ascertain in the copper smelting works of Cornwall and Wales This influence is very apparent in the condition both of the animals and vegetables in the vicinity, horses and cows commonly lose their hoofs, and the latter are often to be seen in the neighbouring pastures crawling on their knees and not unfrequently suffering from a cancerous affection in their rumps, whilst the milch cows, in addition to these miseries, are soon deprived of their milk, the men employed in the works are more healthy than we could *a priori* have supposed possible, the antidote upon which they all rely with confidence, whenever they are infested with more than an ordinary portion of arsenical vapour, is *sweet* oil, and an annual sum is allowed by the proprietors in order that it may be constantly supplied, this opinion is not solitary, for Tachenius relates that the poisonous effects, such as convulsions, gripes, and bloody stools, with which he was seized from exposure to the fumes of arsenic, were relieved by milk and oil"

Dr. Paris does not say how he obtained this information, but the *Dictionary of National Biography* tells us that he practised medicine in Penzance from 1813 to 1817, so he had opportunity to collect such data in Cornwall However, the statement quoted was obviously of little or no value as evidence even at the time of publication, for several reasons (1) There is nothing to show the cancerous nature of the alleged tumours; one does not of course blame Dr Paris for this, for the microscopic diagnosis of malignancy had not then been begun (2) We are told nothing about the incidence upon the cow-population-at-risk (3) Dr Paris does not tell us, as a modern investigator would be expected to do, whether the curious incidence of these affections upon hoofs and rumps was the same in Cornwall, and in Wales, moreover, in his fifth edition, published only two years later, he omits all reference to Wales without any comment on this change (4) No attempt is made to show that arsenic, among the various emanations from the industry, was the active substance And surely, if no better evidence than this has come from the locality in question during more than a century, the writers on cancer who have quoted and requoted it over and over again during this period should have come to regard it as still more suspect

Dr Paris goes on to say "It deserves notice that the smelters are occasionally affected with a cancerous disease in the scrotum, similar to that which infests chimney-sweepers, and it is singular that Stahl in describing the putrescent tendency in the bodies of those who die from this poison, mentions in particular the gangrenous appearance of these parts"

Seventy years after the appearance of the 5th edition of Dr Paris's book, Henry Butlin, surgeon to St Bartholomew' ospital, who had a very different standard of ac [illegible] igated this matter To Butlin, no

Parliament

Compulsory Treatment of VD

ON Dec 15 Dr **EDITH SUMMERSKILL** carried with her into the "ayes" lobby 30 other members, including Dr Morgan, in support of her prayer for the annulment of regulation 33B The "noes" numbered 245 and included 9 medical members Dr Summerskill said the Minister of Health was toying with the problem and delaying real action Last year there were 70,000 admitted new cases of venereal disease, and probably as many more untreated or untraced We had gone back to the situation of 1932 and would soon be back at 1928 when 16,000 expectant mothers were found to be infected Let us have more clinics, and for women clinics where all their complaints are treated, let us follow up contacts, but if a patient ceases attendance let an order be served on him She quoted Major S M Laird as having said that as a result of compulsory notification in Sweden the defaulter rate in 1935 was only 2 5%, while in this country (without compulsory notification) it was 82 5% But Mr Brown later called the comparison fallacious because the English figure was obtained just by subtracting from 100 the percentage of cases stated to have completed their cure in that year The regulation as framed might, she said, cause hardship and injustice to some unfortunate woman, but it would be ineffective and she called on the house to be bold, frank and courageous —Mrs **HARDIE**, in seconding the motion, agreed that the regulation would be useless and dangerous All she wanted was an extension of confidential medical treatment, combined with a great educational effort

Sir **FRANCIS FREMANTLE** thought we were all agreed that venereal disease should be treated like other diseases and equally agreed about moral and educational measures, had these been under discussion But he blamed the house for being unwilling to look disgusting facts in the face and failing to sense an immediate peril He recounted the change of medical and scientific opinion from regulation of prostitution to the provision of free and secret treatment , he recalled the rejection of the Edinburgh Corporation Bill 1928 for fear it would impair the voluntary system But what, he said, is the good of pretending to set up clinics when you have not the doctors to man them ? Notification without treatment is a waste of time and this regulation brought in, like other public health measures, in a small way should be tried out to see how far it is efficient —Dr **HADEN GUEST** warmly endorsed this view and spoke of the definite problem of saving men and women, in the Services and shortly to be called up, living in conditions favourable to a grave spread of venereal disease The press had done admirable work in publicity during recent months, leading up to the frank and free broadcast discussion But what was the value of notification, or even treatment, if not directed to the source of infection ? To set up in this country clinics on the Swedish standard would mean multiplying them by ten or more Nor had compulsory notification prevented the rise of venereal disease in the Services —Sir **ERNEST GRAHAM-LITTLE** said that science should regard the present situation as an epidemic which could not be stopped by ordinary safeguards He was not himself fond of notification he thought it destroyed to a large extent the privacy which ought to attend medical treatment The Minister might later find it necessary to extend his powers to include notification , meanwhile, let us take this regulation as an instalment —Capt **G S ELLISTON** agreed with Mr Graham White that no government dare resist the responsibility of enforcing some regulation of this kind , we could do no other than apply public health measures to secure treatment for the small group of cases which played a big part in spreading infection —Dr **H B MORGAN** opposed compulsion in any form whether in notification or treatment "I have never yet known a case," he said, "when the situation was properly explained in strict confidence, that would not accept treatment" If the Minister did not know how to work the voluntary method, let him ask psychologists

THE MINISTER'S REPLY

Mr **ERNEST BROWN** registered agreement that venereal diseases are an evil which must be stamped out if possible, that their spread hampers the war effort, that moral and ethical issues lie behind the que Promiscuity could not be made safe and the MRC refused the task of recommending a prophylactic ought to do our utmost to extend and improve spread of accurate knowledge and steps had been t to coordinate education in this subject with all health subjects by the Central Council for Education The press had been most helpful and a constructive and sane discussion on a healthy should help the religious forces in this country to their own case clear Is special action needed The debate made it clear that there was opinion for such action , perhaps the dissentient outside was larger in bulk than in the house minister would raise the issue unless there were cause for doing so In prewar days the voluntary was not failing, although more might have been His aim was to strengthen that effort, not to Regulation 33B was only part of the answer problem The three main essentials were public tion, adequate free treatment and indirect action courage promiscuity But he claimed for the reg that it represented a new approach to the prob public health approach It did not attempt, as did of the last war, to control solicitation and it discriminate between the sexes Medical officers always done their best to find out where the disea contracted (To use the word "informer" for described as somewhat far fetched by 7 medical in charge of VD clinics in a letter to the *Daily T* Dec 15) It was their public duty Regulation gave the doctor the power, or rather the duty, to information on, but not to anybody in public notification is made every attempt will also be get the person to come voluntarily The the regulation had already caused some who had volunteered for treatment to come forward

Dr **RUSSELL THOMAS** what remedy there was innocent party against whom information had been Mr **BROWN** replied My hon friend has got it pletely wrong All that they are asked to do is to for examination in complete secrecy There is no discussion If the MOH on the local authority reason to believe there has been malice, very penalties are provided

QUESTION TIME

Edinburgh Smallpox Outbreak

Mr **A EDWARDS** asked the Secretary of State for Sc whether he would give the dates of the development smallpox rash or chickenpox rash in any cases believed to be chickenpox, in the cases diagnosed as during the recent outbreak at Edinburgh , and the their removal to hospital ?—Mr **T JOHNSTON** replied only smallpox case in the Edinburgh outbreak which originally diagnosed as chickenpox was the first case covered in the Royal Infirmary The rash appeared Oct 27, and the patient was removed to the City Fever pital next day —Mr **EDWARDS** How many of the four fatal cases of smallpox in Edinburgh and district had been patients in a medical institution or an associated convalescent home before they contracted smallpox ?—Mr **JOHNSTON** There have been six deaths from smallpox since the present outbreak started in Edinburgh The first four of these had been patients in a medical institution or associated convalescent home in Edinburgh on the probable date of infection The two other patients had no connexion with the institution or home —Mr **A EDWARDS** Was the first case of smallpox at Edinburgh taken to the Royal Infirmary suffering from some other illness and did the supposed chickenpox attack develop afterwards, or was the patient taken to the Royal Infirmary as a case of chickenpox ?—Mr **JOHNSTON** The first case of smallpox in Edinburgh was in the Royal Infirmary for another illness when an illness developed which was at first thought to be chickenpox As infectious disease is not treated in the Royal Infirmary, he was removed to the City Fever Hospital, where after examination he was diagnosed as a case of smallpox

Planning for TB Control

Mr **JAMES GRIFFITHS** asked the Minister of Health wha progress has been made in carrying out the steps to combat tuberculosis recently announced , and what arrangements have been made in regard to the provision of financial assist-

trouble was too great if he could learn anything about the cause of "chimney-sweeps' cancer", his laborious travels and inquiries are described in three lectures *On Cancer of the Scrotum in Chimney Sweeps and Others*, delivered before the Royal College of Surgeons of England in 1892, which are well worth reading or re-reading (*Brit med J* 1892, i, 1341, ii, 1, 66) Butlin went to Cornwall to see what he could learn of the phenomena described by Dr Paris, and in his third lecture gives the following account of his inquiries

> "This remark of Paris has been referred to or quoted by several authors, both English and foreign, but I have failed to find the smallest evidence on which it can rest As Dr Paris spoke especially of the smelting works and burning houses of Cornwall, I made careful inquiries of the doctors at Camborne and Hayle In the neighbourhood of Camborne there are several tin burning houses, the tall chimneys of which puff forth a white smoke The surrounding fields are very poor in vegetation and there are but few cattle in them The atmosphere is said to be unhealthy to animals and men, rather from sulphurous acid than from arsenic I was told that not long since an action had been brought by a gentleman in the neighbourhood to restrain the tin-burners from continuing to burn tin there The plaintiff declared that he had lost a horse owing to the unhealthy fumes, but he lost his action also Mr Pike, a gentleman largely engaged in the mines, told me that there is but little arsenic now compared with what there was a few years ago Neither Dr Hutchinson, who had been more than thirty years in practice in Camborne, nor my brother, who has been practising there for more than twenty years, nor Dr Erskine, with ten years' experience of the diseases of the people, ever remembered to have met with a case of cancer of the scrotum in the whole course of their experience
>
> Hearing that tin smelting is carried on at Hayle, I drove there, and called on Dr Mudge, who has been for very many years in practice, and, with his sons, attends a very large area around Hayle, and is familiar with the diseases of the work people of all descriptions He said that the smelting of tin is not now carried on to the same extent as formerly in that neighbourhood Dr Mudge remembered to have seen in past times eruptions and even rawness of the scrotum and insides of the thighs of the men exposed to the fumes of arsenic, but he had never seen a case of cancer of the scrotum, although he had seen several cases of cancer of the penis Speaking of the effect of the arsenical fumes on animal life he had never seen the loss of the hoofs of horses and cows described by Dr Paris On more than one occasion of late years the death of a cow had been attributed to the fumes of arsenic, and attempts had been made to obtain damages from the smelters The viscera of some of these animals had been sent to Dr Herepath, of Bristol, who had quite failed to discover arsenic in them He further told me that the skin affections of the scrotum were healed by very simple measures when the en washed themselves, which they very often neglected to o when they were in good health"

These statements by Paris have been quoted over and over again by writers on cancer, but I do not remember ever to have seen in this literature any reference to Butlin's criticism

The character of the information contained in Dr Paris's book, which is still offered to cancer research workers as authoritative, may be illustrated by a few items taken at random from the index

Acetification of milk by a thunder storm bears some analogy to the operation of depraved digestion	102
Ale, the supposed lithonthryptic properties of	212
Enemata, Clysters, calculated to fulfil five great indications	315
Prescott, Miss, persons of the first respectability became the dupe of	20
Tea and turtle soup, whether their admixture in the stomach may not form leather	314
Turner, Mr, why he escaped from the dose of arsenic administered to him in yeast dumplings	333

and so on

The writing of this note was suggested by the fact that the 120th anniversary of the publication of Dr Paris's 5th edition in 1822, and the 50th anniversary of Butlin's lectures in 1892, has just been marked by the inevitable reappearance, this time in a large monograph, *Occupational Tumors and Allied Diseases*, by W C Hueper (Springfield, Illinois, 1942), of the story of the cows' rumps, which is once again offered as serious evid of the carcinogenic action of arsenic The refe is given wrongly in the book in question as "P J A, Pharmacology, 3rd ed W. Philipps, Lon 1822", actually the title of the book is *Pharmacol* the year of issue of the 3rd edition is 1820, and publisher is W Phillips Hence the reader is offered inaccurate reference to a statement of little or no v in an obsolete book

After quoting once more the often-quoted pas about the cows' rumps and cancer of the scrotum, Hueper (*loc cit*, pp 36 and 41) makes the follo comments " . *Paris noticed the high incidence* cutaneous malignancy among the men employed these factories" This is a somewhat highly colou and extended version of Paris's simple statement "the smelters are occasionally affected with a cance disease in the scrotum " Dr Hueper proc " Paris mentioned the development of cance ulcers in domestic animals (horses and cows) grazing meadows situated close to the copper smelters and burning establishments The arsenical fumes rele *from these plants into the atmosphere were precipit* upon the vegetation of the adjacent countryside arsenic contaminating the grass of the meadows *ingested by grazing animals and thus caused the deve* ment of the cancerous lesions" This picturesque a tion about the grass of the meadows and the gra animals adds nothing whatever to the very question value of Dr Paris's story, it is not what Paris and he makes no claim that the arsenic was taken the mouth, it is surely quite possible that in such neighbourhood arsenic might act upon the skin direc from outside Lastly, Dr Hueper, like most of the writers who have quoted from Paris, lays down cancer occurred in horses, whereas Paris makes no statement We may now await the next appearanc the story in the literature of cancer, and may re upon the phenomenon described, I think by Wil Trotter, as "the mysterious viability of the false"

CARCINOMA OF THE NASAL MUCOUS MEMBRANE IN SH

Niebeile[1] describes the occurrence of carcinoma of *nasal mucous membrane occurring in a single h* inbred flock of Hampshire sheep on the Limbach es in Saxony Cases of this disease had appeared du several years and ten cases occurred during the cours a few months The author describes these tumour "carcinoma of the ethmoid bone which corresponde essential character to the normal histological struc of the olfactory mucous membrane," and he gives naked-eye figures of tumour masses in the nasal ca and a microphoto showing obvious carcinoma W regard to ætiology, the author makes the interes suggestion that the occurrence of this tumour in a si strain of sheep is comparable to the incidence of mamm cancer in certain strains of mice, but he considers also possibility that arsenic might be concerned, as follow

> "Zum anderen ist aber zu beachten, daβ das Ritte Limbach in der weiteren Umgebung der Freiberger Hu werke liegt und daβ Schäden durch arsenhaltigen Flugst unter den Rindern der dortigen Gegend *nicht* selten Allerdings handelt es sich bei diesen Arsenschäden, so ich sie bisher untersuchen konnte, stets um akute, Geschwürsbildung im Verdauungsapparat einhergeh Veranderungen"

which may be translated

> "One must take into consideration *also that the* Lim manor lies in the remoter neighbourhood of the Frei smelting works, and that lesions due to arsenical fume not uncommon among the horned cattle of that dist But these arsenical lesions, as far as I have hitherto been to investigate, *always consist in acute changes*, with ulc tion, in the digestive tract"

Estimations of arsenic in organs of sheep bearing na tumours, carried out in the Institut fur Gerichtlic Medizin in Leipzig, are reported "Portions of t brain were first examined These have extrem minimal amounts of arsenic, and contain actually *l than* 0 1 mg/kg brain substance" In the tumo "only extremely minute amounts again *less th*

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[1] Niebeile, K / *Krebsforsch* 1939-40 49, 137

> /kg could be detected " In liver " an amount of /kg was found, that is, relatively considerably in the brain and tumour "

his clear and concise account of the available eberle draws the following cautious conclusion the pathogenesis of the endemic ethmoid cancer k of sheep on the Limbach estate is obviously explained However, I think that a certain of the disease with the locality and with by arsenic can scarcely be excluded " In 's textbook (p 41, see also p 408), Nieberle's n, and very guarded conclusions, undergo the transformation

> th, Nieberle reported the endemic occurrence of oma of the nasal sinuses in a flock of sheep kept fume and dust zone of these smelters in Freiberg He that this condition was caused by the chronic ion of arsenic, as not only was arsenic found in the tumour tissue and liver of the affected animals, but of acute arsenic poisoning with gastrointestinal tions were not uncommon among the sheep which the cancerous animals "

version of Nieberle's paper is either wholly mis-, or false, in every single particular (1) His non-phrase " in the remoter neighbourhood of the smelting works," appears as " sheep kept in the d dust zone of these smelters in Freiberg " [2] rle's inability to exclude arsenic becomes a direct on that arsenic is the cause of the tumours emphasis laid by the medicolegal analyst upon uteness of the amounts of arsenic in the brain ours is ignored (4) The last statement is simply There is no *mention whatever in the paper of any* ks of acute arsenic poisoning with gastro-intestinal tations ' in " the sheep which furnished the us animals " at Limbach , these attacks occurred horned cattle in the vicinity of Freiberg (' unter dern der dortigen Gegend " , see passage quoted above) The whole import of Nieberle's statement contrast the acute intestinal lesions due to arsenic the horned cattle around Freiberg with the slow tic changes in the sheep at Limbach and this t is simply ignored, and the whole sense of the reversed, in the quotation given above from the k

ARSENIC CANCER IN DEER

[3] investigated a disease affecting the wild mam- (red deer, roe deer, hares, foxes) of the Tharandter lying to the east of the mines of Halsbrucke and nhütten in Saxony, and characterised by loss of blackening of the skin, thickening of the stratum and extreme emaciation As many as 60–70% red deer were affected " Often horny warts were d abundantly over the skin, or it was covered horny desquamation (Manchmal war die Haut 1 mit Hornwarzen besetzt oder mit Hornabschil- uberzogen) " The context indicates that these were found in red deer, though the species is not explicitly , the skin of the roe deer was in almost way less affected These warts are the sole ic structures recorded by Prell in his report of the tion of 41 red deer, 102 roe deer and 27 hares paper of 14 pages cancer is mentioned once only l) in a sentence which refers to our general know- of the action of arsenic Several hundred estima- of arsenic in the organs of these animals were made ranged from a few mmg /kg to 42 mg /kg in the and to 12 mg /kg in the hair " (Cf analyses on h sheep above) Arsenic was often absent in the of animals showing the lesions described above, never present in those not showing such lesions is a zoologist and makes no claim to knowledge ology A part of the pathological work was undertaken by Professor Hofmann of the Hygienisches Institut der Technischen Hochschule in Dresden, who contributes a short paper, *Die Gefahrdung der Tierwelt durch Industriegase* (to which curiously enough Hueper makes no reference either in the text or in the bibliography) following immediately that of Prell (*loc cit* , p 670) Hofmann devotes five words to the single cancer, in a roe deer, which was discovered in the whole course of this investigation—" Weiterhin sahen wir aktinomykotische Auflagerungen auf der Pleura eines Hasen und ein Hautcarcinom bei einem Reh " Hueper gives the following account of Prell's results

> " Prell reported in 1936 the occurrence of extensive arsenical injuries among the domestic and wild animal life in the region of Freiberg, Saxony, where numerous smelters (silver and lead) released arsenic containing fumes into the air It was shown that these arsenical fumes were spread over an area measuring 50 km in diameter and settled upon the vegetation Horses, cows, goats, and pigs, feeding on this vegetable matter, developed loss of hair and hyperkeratoses, while melanotic spots and precancerous warts were seen occasionally on the skin of deer inhabiting the forests of this region A carcinomatous lesion was found in one deer In addition to the cutaneous manifestations of chronic arsenic poisoning domestic, *as well as wild animals* were affected by arsenica enteritis, gastric ulcers and cirrhosis of the liver There existed in this area an extraordinary mortality among insects, especially bees "

When one compares Hueper's version with the original, one finds that Prell makes no mention whatever of any hyperkeratoses in horses, cows, goats or pigs, nor of any " extraordinary mortality among insects " *other than bees, apart from a bare statement of a* mortality among silkworms Hueper chooses to describe the warts in deer as ' precancerous " Possibly they were precancerous, but Prell does not say so A transcriber has no right to colour the evidence of a first-hand observer by the insertion of such a word There is the less justification for this addition in that these " precancerous " warts occurred chiefly or solely in red deer, in which not a single cancer was found

[Anyone who reads the actual papers of Prell and Hofmann must surely be struck by one view of the matter which is the reverse of that advocated by Hueper Hofmann emphasises the importance of analyses of arsenic in the tissues because the evidence of morbid anatomy alone cannot prove that any given lesion is due to arsenic, and points out that it was by means of estimations of arsenic " that the so called Hüttenrauchkrankheit (smelting-fume disease) of horned cattle in the district of the Freiberg smelting works, which had been known for many decades was recognised as chronic poisoning by arsenic The clinical phenomena, such as chronic diarrhoea cough, scleroderma chronic squamous eczema muscular atrophy paralytic weakness, emaciation, &c , give no more proof of chronic arsenic poisoning in the cattle than do the post-mortem findings, which consist chiefly in the presence of old ulcers and scars in the abomasum and small intestine It was the demonstration of arsenic in the organs of the diseased cattle which brought the clear recognition that the so-called smelting-fume disease was a chronic arsenic poisoning " This extensive list of widespread pathological changes observed in numbers of cattle over a long period [4] contains no reference to the detached hoofs and cancerous rumps of the Paris tradition nor to cancer of the nasal mucous membrane such as occurs in the Limbach sheep (see above), nor indeed to cancer in any form This absence of malignant growths in cattle, and the yield of one single cancer from the examination of 143 deer and 27 hares exposed to arsenic, surely amounts to evidence against rather than for, the carcinogenic action of arsenic in these animals, of whom presumably a few at any rate live long enough for the development of malignant growth]

SUMMARY

Elsewhere [5] Hueper summarises the matter thus " arsenic cancer has a relatively long latent period,

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has no means *of* knowing the exact distance of the estate e the sheep are kept from the smelting works Stieler's *d Atlas* shows unfortunately two places called Limbach one km and one 19 km from Freiberg and respectively 45 and 4 km from Halsbrücke one of the two sites of the smelting named by Prell The other Muldenhütten does not r on the map Prell (*loc cit* p 669) says " The effective of suspended arsenic is much greater than is usually pposed (it extends under some circumstances to a distance of 20 km or more) '

, H *Arch Gewerbepath Gewerbehyg* 1936–37 7, 656

[4] Prell (*loc cit* p 667) says that a good description of the smelting-fume disease " was given in 1878 by Haubner Director of the Royal Veterinary School in Dresden

[5] *Cancer Res* 1942 2, 559 The references 5–7 are to Nieberle, Paris and Prell

usually surpassing that of the average life span of the species used in such experiments This contention is supported by the observation that animals with a much longer life span (horses, sheep, deer) have developed an environmental type of arsenic carcinoma of the skin or of the nasal mucous membranes (5–7) "

What is the evidence for this generalisation concerning "an environmental type of arsenic cancer" in horses, sheep and deer?

(1) *Horses* —Dr Paris does not claim any cancers in his hoofless horses, and even such slightly neoplastic structures as hyperkeratoses are not recorded in horses by Prell What evidence is there in the literature that cancer has ever been produced in horses by arsenic? (For some reason, Hueper omits altogether from his list cows, the species in which Paris claims cancerous growths)

(2) *Sheep* —There are no definite grounds for the argument that the nasal cancer of the Limbach sheep is due to arsenic

(3) *Deer* —This use of the plural is not justified by the single carcinoma of the skin found by Prell and Hofmann in 102 roe deer and 41 red deer This solitary tumour may possibly have been "an environmental type of arsenic carcinoma," but one must bear in mind that we have no data on the spontaneous occurrence of epithelioma in roe deer

This then is the basis of the important generalisation, that horses, sheep and deer have developed an environmental type of arsenic cancer It is desirable that such statements should be examined before they are finally built into the permanent fabric of textbook tradition, from which they cannot by any possibility be eradicated

Notes and News

University of Cambridge

At recent examinations the following were successful

FINAL EXAMINATION FOR M B

Part I Surgery, Midwifery and Gynæcology —F Ashton, E H Back, R A J Baily, H W Balme, R F Barlow, D R Barnes, C H Barnett, G M Barrett, W M Bennett, G G B [illegible]ckman, R H Boardman, J F Bolton C[illegible]ter, D L Bridge[illegible], A J Briggs, W L Calnan, A Carpenter, M C Connell, Davenport, E W Deane, M B Devas, R J Dickson, W A dos [illegible]ntos, D H Drennan, C O Edwards, J W Evans, J W Fawcett, W M Foreman, R M Forrester, H A Fraser, A G Freeman, D S G Genge, R N R Grant, H C [illegible]pta, B Haigh, J R Handforth, J Hardy, E H Hare, H Ha[illegible] M Hemming, J K Hinds, P Holliday, A E Howarth, P H [illegible]ggill, D M Jeffreys, P F Jones, R N Jones, D A G Kaye, H W H Kennard, A Lask, J. O Laws, J Lister, J C Lloyd, R E Loder, V U Lutwyche, C S McKendrick, A I MacLeod, D H Makinson, P G Mann, A S Mason, H C Mason, J K F Mason, R G May, F S Mellows, R B Meyer P H Mitchell, D A Mitchison, J R Moffat, G M J Nicholl, J E Oliver, J H C Phillips, J M Potter, E J T Prettejohn, A P H Randle, J R Robinson, K C Robinson, P H Rogers, P H Schurr, E L Simons, A N Smith, T R Steen, R V Stone, R G Tasker, S Tischler, W H Townsend, J D Trethowan, L R Twentyman, B P Webber, M E Wehner, D Whitfeld E H Williams, P A O Wilson, O H Wolff, R G Woodsend, W D Wylie and S Young

University of Manchester

At recent examinations the following were successful

FINAL EXAMINATION FOR MB, CH B

Shirley G Barrett (Mrs Ashton), Samuel Falk, A I Goodman, Stanley Grace, Raymond Greenwood, Hymo Lempert and John Whewell

Part I —J R Archibald, H L Bush, Jack Hinchliffe, and S B Rampling

University of Dublin

The board of Trinity College has invited Dr J M O'Connor, professor of physiology in University College, Dublin, to deliver the John Mallet Purser lecture in 1943

On Dec 9 at the school of physic, Trinity College, the following degrees were conferred

MD —J C Gaffney and C B Robinson

MB, BCh, BAO —K H Anderson, Ivy K Bayne, Rena Becker, Brenda R Boydell, G R Connolly, J W Dignan, C K Elliott, J M Hanrahan, Hannah E Hinchcliff, G A M Lee, Basil Marcus, L T H Mills, Lavinia F Nightingale, F M Lanigan-O'Keeffe, A V Poots, R O D Reid, N L Smith, M G Jackson Smyth and R T Towson

Courses on Industrial Nursing

The Nuffield Provincial Hospitals Trust has given a grant for industrial nursing courses to be held outside London, and the Royal College of Nursing, in conjunction with the University, has arranged for the first of these to be held at Glasgow on March 1, 1943 Further [illegible] Miss F N Udell, Scottish Board, 40, Melville Street,

A Factory Antenatal Service

At a meeting on Dec 11 of the maternity and child group of the Society of Medical Officers of Health, w Catherine Morris Jones, the president, in the chair, an ment by which an antenatal and gynæcological clir established within the precincts of a factory was descr Dr L B Bourne, medical officer to the factory, and M O'Sullivan, consultant to the works clinic The c situated in premises outside the workshops and can be by women unknown to their fellow workers An appoi system prevents waste of time, and the medical staff a by their knowledge of the woman's condition of he modify her working hours immediately when necessary O'Sullivan commented on the continued good health of the women, who carried on their work of makin parts up to a late stage of pregnancy Fatigue he t could usually be ascribed to the strain of shopping an duties carried out in addition to the factory work, rath to the work itself The speakers put forward their experiment as a war time measure only, but claimed had already justified its existence by lessened abse and improved team work among the workers The was popular among the women

Anglo-Iranian Pharmaceutical Company

This company has been formed by five manufactu medicinal products to facilitate the supply to Iran of pl ceutical products produced in the United Kingdom constituent members are Boots Pure Drug Company, I Drug Houses, Evans Sons Lescher and Webb, Glaxo L tories and The Wellcome Foundation The registered o the company is Tavistock House South, Tavistock S London, W C 1

" the question might be raised whether at the p state of the practice of surgery a surgeon should any concern himself with these questions of anæsthesia, o them in the hands of the anæsthesiologists My fee that there are as yet too few of them, and that we stil concern ourselves with the subject of anæsthesia b I find that when a patient dies under an anæsthetic I a person who has to tell the family. "—Dr F A C *Ann Surg* 1942, **116**, 564

Appointments

GILLIS, LEON, MB WITWATERSRAND, MCH ORTH LPOOL, FRCSE medical superintendent, Borough General Hospital, Ips

HERN, J R B, DM OXFD, MRCP physician to inpatients, Chest Hospital

SALINGAR, E L, MB LPOOL, FRCSE RSO at Warrington Inf

STAUNTON, E G, MB NUI RSO Beckett at Hospital, Barn

Colonial Medical Service —The following appointments nounced —

CHEVERTON, R L, MRCS DMS, Cyprus,
CRONYN, H D, FRCSE, DTM & H specialist surgeon, Cy
EDDY, T P, MRCS MO, Gambia,
EVANS, H S, BA CAMB, MRCS MO (Grade I), Fiji
HETHERINGTON, H B, MB TORONTO DMS, British Guia

Births, Marriages and Deaths

BIRTHS

CHAPPEL —On Dec 12, the wife of Dr H M Chappel, of M —a daughter

KERBY —On Dec 14, at Reading, the wife of Dr T R F Ke son

LESSER —On Dec 11, at Wakefield, the wife of Captain S Lesser, RAMC—a son

MCCULLAGH —On Dec 10, at Cambridge, the wife of Commander Graham McCullagh, RNVR—a daughter

NASSIM —On Dec 10, in London, the wife of Lieutenant R Nassim, RAMC—a son

PHILLIPS —On Dec 13, at Hemel Hempstead, to Vio Hatfeild), wife of Dr E S Phillips—a daughter

MARRIAGES

NEWBY—STRANGE —On Dec 12, at Stevenage, Robert to Margaret Miriam Strange, MB

SHAWYER—JAMIESON —On Dec 12, at Guildford, Robert A Shawyer, BM, to Elizabeth Jamieson

DEATHS

COLBECK —On Dec 16, at Farnborough, Hants, Edmund Colbeck, OBE, MD CAMB, FRCP, in his 78th year

CRIPPS —On Dec 16, at Bournemouth, Charles Couper Cri DURH, aged 88

POYNDER —On Dec 13, at Wootton St Lawrence, Hants, Frederick Poynder, MRCS, lieut-colonel RAMC retd, a

PUCKLE —On Dec 13, at Churchstoke, Montgomery, Selw Puckle, BA CAMB, MB EDIN, JP, aged 83

RUCK —On Dec 11, at Sapperton, Cirencester, David Ruck, LRCP, late of Ealing, aged 82

usually surpassing that of the average life span of the species used in such experiments This contention is supported by the observation that animals with a much longer life span (horses, sheep, deer) have developed an environmental type of arsenic carcinoma of the skin or of the nasal mucous membranes (5–7) ”

What is the evidence for this generalisation concerning “ an environmental type of arsenic cancer ” in horses, sheep and deer ?

(1) *Horses* —Dr Paris does not claim any cancers in his hoofless horses, and even such slightly neoplastic structures as hyperkeratoses are not recorded in horses by Prell What evidence is there in the literature that cancer has ever been produced in horses by arsenic ? (For some reason, Hueper omits altogether from his list cows, the species in which Paris claims cancerous growths)

(2) *Sheep* —There are no definite grounds for the argument that the nasal cancer of the Limbach sheep is due to arsenic

(3) *Deer* —This use of the plural is not justified by the single carcinoma of the skin found by Prell and Hofmann in 102 roe deer and 41 red deer This solitary tumour may possibly have been “ an environmental type of arsenic carcinoma,” but one must bear in mind that we have no data on the spontaneous occurrence of epithelioma in roe deer

This then is the basis of the important generalisation, that horses, sheep and deer have developed an environmental type of arsenic cancer It is desirable that such statements should be examined before they are finally built into the permanent fabric of textbook tradition, from which they cannot by any possibility be eradicated

Notes and News

University of Cambridge

At recent examinations the following were successful

FINAL EXAMINATION FOR M B

Part I Surgery, Midwifery and Gynæcology —F Ashton, E H Back, R A J Baily, H W Balme, R F Barlow, D R Barnes, C H Barnett, G M Barrett, W M Bennett, G G B Blackman, R H Boardman, J F Bolton C ter, D L Bridgewater, A J Briggs, W L Calnan, A Carpenter, M C Connell, J Davenport, E W Deane, M B Devas, R J Dickson, W A dos Santos, D H Drennan, O O Edwards, J W Evans, J W Fawcett, W M Foreman, R M Forrester, H A Fraser, A G Freeman, D S G Genge, R N R Grant, H C ipta, B Haigh, J R Handforth, J Hardy, E H Hare, H Ha M Hemming, J K Hinds, P Holliday, A E Howarth, P H l ggill, D M Jeffreys, P F Jones, R N Jones, D A G Kaye, H W H Kennard, A Lask, J. O Laws J Lister, J C Lloyd, R E Loder, V U Lutwyche, C S McKendrick, A I MacLeod, D H Makinson, P G Mann, A S Mason, H C Mason, J K F Mason, R G May, F S Mellows, R B Meyer, P H Mitchell, D A Mitchison J R Moffat G M J Nicholl, J E Oliver, J H C Phillips, J M Potter, E J T Prettejohn, A P H Randle, J R Robinson, K C Robinson, P H Rogers, P H Schurr, E L Simons, A N Smith, T R Steen, R V Stone, R G Tasker, S Tischler, W H Townsend, J D Trethowan, L R Twentyman, B P Webber, M E Wehner, D Whitfeld, E H Williams, P A O Wilson, O H Wolff, R G Woodsend, W D Wylie and S Young

University of Manchester

At recent examinations the following were successful

FINAL EXAMINATION FOR MB, CH B

Shirley G Barrett (Mrs Ashton), Samuel Falk, A I Goodman, Stanley Grace, Raymond Greenwood, Hyme Lempert and John Whewell

Part I —J R Archibald, H L Brisk, Jack Hinchliffe, and S B Rampling

University of Dublin

The board of Trinity College has invited Dr J M O'Connor, professor of physiology in University College, Dublin, to deliver the John Mallet Purser lecture in 1943

On Dec 9 at the school of physic, Trinity College, the following degrees were conferred

MD —J C Gaffney and C B Robinson

MB, BCh, BAO —K H Anderson, Ivy K Bayne, Rena Becker, Brenda R Boydell, G R Connolly, J W Dignan, C K Elliott, J M Hanrahan, Hannah E Hinchcliff, G A M Lee, Basil Marcus, L T H Mills, Lavinia F Nightingale, F M Lanigan-O'Keeffe, A V Poots, R O D Reid, N L Smith, M G Jackson-Smyth and R T Towson

Courses on Industrial Nursing

The Nuffield Provincial Hospitals Trust has given a grant for industrial nursing courses to be held outside London, and the Royal College of Nursing, in conjunction with the University, has arranged for the first of these to be held at Glasgow on March 1, 1943 Further par[illegible] from Miss F N Udell, Scottish Board, 40, Melville Street, Edinburgh, 3

S. M. S. Medical College

A Factory Antenatal Service

At a meeting on Dec 11 of the maternity and child welf group of the Society of Medical Officers of Health, with Catherine Morris Jones, the president, in the chair, an exp ment by which an antenatal and gynæcological clinic w established within the precincts of a factory was described Dr L B Bourne, medical officer to the factory, and Mr J O'Sullivan, consultant to the works clinic The clinic, situated in premises outside the workshops and can be visi by women unknown to their fellow workers An appointme system prevents waste of time, and the medical staff are al by their knowledge of the woman's condition of health modify her working hours immediately when necessary O'Sullivan commented on the continued good health of m of the women, who carried on their work of making ra parts up to a late stage of pregnancy Fatigue he thoug could usually be ascribed to the strain of shopping and ho duties carried out in addition to the factory work, rather th to the work itself The speakers put forward their pione experiment as a war time measure only, but claimed that had already justified its existence by lessened absentee and improved team-work among the workers The cli was popular among the women

Anglo-Iranian Pharmaceutical Company

This company has been formed by five manufacturers medicinal products to facilitate the supply to Iran of pharm ceutical products produced in the United Kingdom Tl constituent members are Boots Pure Drug Company, Briti Drug Houses, Evans Sons Lescher and Webb, Glaxo Labor tories and The Wellcome Foundation The registered office the company is Tavistock House South, Tavistock Squar London, W C 1

“ the question might be raised whether at the pres state of the practice of surgery a surgeon should any long concern himself with these questions of anæsthesia, or lea them in the hands of the anæsthesiologists My feeling that there are as yet too few of them, and that we still mu concern ourselves with the subject of anæsthesia becau I find that when a patient dies under an anæsthetic I am t person who has to tell the family ”—Dr F A Colle *Ann Surg* 1942, **116**, 564

Appointments

Gillis, Leon, MB WITWATERSRAND, MCH ORTH LPOOL, FRCSE, DL medical superintendent, Borough General Hospital, Ipswic
Hern, J R B, DM OXFD, MRCP physician to inpatients, Lond Chest Hospital
Salingar, E L, MB LPOOL, FRCSE RSO at Warrington Infirmar
Staunton, E G, MB NUI RSO Beckett at Hospital, Barnsley

Colonial Medical Service —The following appointments are announced —

Cheverton, R L, MRCS DMS, Cyprus,
Cronyn, H D, FRCSE, DTM & H specialist surgeon, Cyprus
Eddy, T P, MRCS MO, Gambia,
Evans, H S, BA CAMB, MRCS MO (Grade I), Fiji
Hetherington, H B, MB TORONTO DMS, British Guiana

Births, Marriages and Deaths

BIRTHS

Chappel —On Dec 12, the wife of Dr H M Chappel, of Minehe —a daughter

Kerby —On Dec 14, at Reading, the wife of Dr T R F Kerby— son

Lesser —On Dec 11, at Wakefield, the wife of Captain S A Lesser, RAMC—a son

McCullagh —On Dec 10 at Cambridge, the wife of Surge Commander Graham McCullagh, RNVR—a daughter

Nassim —On Dec 10, in London, the wife of Lieutenant Regina Nassim, RAMC—a son

Phillips —On Dec 13, at Hemel Hempstead, to Violet (n Hatfeild), wife of Dr E S Phillips—a daughter

MARRIAGES

Newby—Strange —On Dec 12, at Stevenage, Robert Newb to Margaret Miriam Strange, MB

Shawyer—Jamieson —On Dec 12, at Guildford, Robert Anders Shawyer, BM, to Elizabeth Jamieson

DEATHS

Colbeck —On Dec 16, at Farnborough, Hants, Edmund Hen Colbeck OBE, MD CAMB, FRCP, in his 78th year

Cripps —On Dec 16, at Bournemouth, Charles Couper Cripps, DURH, aged 88

Poynder —On Dec 13, at Wootton St Lawrence, Hants, Geor Frederick Poynder, MRCS, lieut colonel RAMC retd aged

Puckle —On Dec 13, at Churchstoke, Montgomery, Selwyn H Puckle, BA CAMB, MB EDIN, JP, aged 83

Ruck —On Dec 11, at Sapperton, Cirencester, David Nann Ruck, LRCP, late of Ealing, aged 82